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IF any more warnings against fires were needed, the burning of St. John ought to furnish them. Two-thirds of the town is gone, it is said, including most of the dwelling-houses and pretty much all the business quarter. Such fires naturally and reasonably give us a greater shock than does a record of an equal amount of loss distributed over a long period, for they represent a much greater injury than the mere sum of the losses which they include. The suffering from them is greatly intensified by the extent of it. The merchant who loses his house loses also his warehouse and goods. The bank in which his deposits were, the insurance company whose policies he held, the manufacturing company in whose stock his earnings were invested, the neighbors with whom he transacted his business, all have suffered, perhaps failed, under the blow. The opportunities to which he would look to make up ordinary losses have vanished with his property. The family that has lost its home has lost also its means of subsistence. The very food and clothing of the whole town are consumed in the shops as well as in the houses, and the gas-light dies out from the streets: plunder and violence follow, and the terrors of war are let loose upon the people. Such blows have a paralyzing effect upon communities, even when a vigorous reaction follows them at first, as it did in Boston, Chicago, and Portland. No insurance covers the losses; in a business aspect there is absolutely no offset and no compensation for them. Yet they are not to be passed over as exceptional phenomena, for which no provision is to be made in our every-day plans. We have seen four of these fires in the last eleven years. There is not a town in the United States, big enough to furnish food for one, that is not liable to one at any time. As towns grow bigger and more crowded, the danger of them increases, and the means of resisting them do not keep pace with it. All the while we know perfectly well — at least those of us who have taken the trouble to find out know, and any one may know — that in other countries ways of building have been devised and are in constant use, which prevent such fires ever occurring. We know that the mob which had unchecked control of Paris in 1870 tried hard for two or three days to burn it, and could only burn single buildings here and there. We know that the expense of such ways of building is found to be a less burden to a community than the losses they guard against; and that they are adopted by nations far less wealthy and powerful, and as we fancy less enterprising, than ourselves. The only obstacles in the way of our adopting them are the common apathy and ignorance, and the unwillingness of individuals to submit to restrictions which are necessary for the public welfare.

WHILE we were writing the last paragraph another fire was added to those that have laid waste our towns. A great part of the famous old town of Marblehead, in Massachusetts, was burned on the 25th of June. Most of the business houses and manufactories of the town were consumed, and hundreds of the inhabitants burned out of their homes. Marblehead is one of the few towns in the older part of New England which retained the quaintness and picturesque irregularity of an older time. The loss of its peculiar features would be from a sentimental point of view a great loss to those who value such characteristics. Sooner or later this kind of destruction comes upon all towns built as ours are. Where the means of the people are small, and they feel compelled to build of wood, and to build close, it is probably useless to expect that so long as wood continues abundant, they will avoid the dangers of it. It may be inevitable that conflagrations should beset the small years of towns here, as croup and measles do those of children. But at least this is no rule for the larger and wealthier cities. And even in the smaller towns, at least those of slower growth, where buildings are handed down from father to son, and where many buildings are put up that are meant to be good enough to last, it is a fair question how far it would be found remunerative to build, as is done in the small towns of the older world, with solider materials. It may, to be sure, be useless nowadays to ask any American town to make preparation for a slow growth.

THE coroner's verdict on the destruction of the tenement house in Shawmut Avenue, Boston, in the burning of which one man was killed and several injured because of the difficulty of escaping, finds that the building "was provided with only one narrow staircase-entrance to the tenements above, and was without a fire-escape as required by law; that the fire originated in or near this only entrance, and so quickly filled the entire building with fire and smoke as to cut off all exit to the street or roof." It appears also that the proprietor of the building took out a permit for one kind of building, and built another; and that the building-inspector's report upon it, rendered under another inspector than the present, did not accord with the structure. The jury recommend a more stringent building-law: "so that every building hereafter erected, or to be occupied above the first or ground floor as a tenement-house, hotel, manufactory, schoolhouse, or place of public assembly, should have more than one staircase enclosed in and constructed of non-combustible materials, and of such width as shall be approved by the inspector of buildings." This is the first decided official recommendation we have noticed of what every considerate person knows ought to be done. It belongs to architects and builders, who naturally more than any others influence the building-laws of our cities, to use their best exertions to bring about this moderate measure of reform; and as architects have taken the initiative before, here is another opportunity for them. After all, the retrospect is encouraging. It is hardly a dozen years since we first made any attempt at efficient building-laws; and in that time public conception of what such laws should be has made a great advance. There is good reason to hope that before a great while we shall learn wisdom, and not continue in this department of civilization to lag behind the rest of the world.

THE accounts given of the tenement house that fell in New York a week or so ago show that the party-wall which first sunk down had been laid on a bed of marsh clay without a footing-course, the foundation wall having two facings of stone and a filling of loose rubble, brickbats, and rubbish, without even bond-stones to connect the two faces. The warning element in the case is the suddenness of it. The wall which gave way had shown no sign of weakness, beyond an ordinary cracking of plastering and sagging of adjacent doors. It gives one more proof that it does not do to build slightly in the expectation that signs of yielding will give notice when it is time to give up a building, or that what would not do for a permanent building is strong enough for one that the proprietor only means to use for a few years. Proprietors change and intentions change; and so long as a building seems to hold its own and brings any profit, there is every temptation to let it stand till its site is needed for something else. The dread which suggests itself now is lest

people, finding that a foundation wall built like this in New York has stood a score of years in such a situation, should be tempted to try such a thing again. It is reported that another tenement house in the same city gives such promise of falling that the occupants have been warned out by the police, but that the dread of losing their month's rent has so much more terror for them than the fear of being crushed, that they will not leave unless the police drive them out. It is not strange that people will risk building tumble-down houses if they can find other people so willing to risk being killed by them.

THERE has been first and last a good deal of controversy concerning the advantage to the Government of the percentage contracts for stone-work on the public buildings, that were made in the Supervising Architect's office a few years ago, during the incumbency of Mr. Mullett. Several very large contracts were let out to stone-cutters on the same terms; for instance, the work on the New York and Boston Post Offices, and on the new building in Washington for the State, War, and Navy Departments. The terms of the contracts were a fixed tariff per cubic foot for the stone furnished, the cutting to be done by day's work, and fifteen per cent on the cost thereof allowed to the contractor as a "margin," for the rent of his yard, shops, and plant, for the using up and sharpening of his tools, and other incidental expenses, and for his profit. These contracts had certain advantages, being a sort of guaranty of solvency in the contractors, and having an elasticity which, coming as they did on a falling market, made them possibly as profitable to the Government as a contract for a fixed amount would have been. They certainly avoided the difficulties which are the bugbears of government contracts, of straw bids, and of contracts deliberately taken at unremunerative rates, to be eked out by bills of relief and log-rolling in Congress; and they were sureties for a good quality of work. On the other hand, they gave temptations to the contractors to make the cost of the work excessive, and to evasion; they obliged the Government to have time-keepers constantly on the watch at the works, and to be dependent on their watchfulness and good faith. It was argued, too, that fifteen per cent was an unreasonably large commission to allow the contractors. It was no more than a contractor would expect to get in estimating for a small piece of work; but in the enormous contracts given out by the Government, it doubtless included an excessive remuneration. Under these circumstances, the Secretary of War, backed by an opinion of the Attorney-General that the Government had a right to abrogate the old contracts, has withdrawn those which were pending with the Richmond Granite Quarries and the Bidwell Granite Company for stone for the north wing of the State, War, and Navy Department building. That this could be done without destroying the profit of the contractors, is apparent from the report of Col. Casey of the United States Engineers, which says that new contracts have been negotiated with the same parties, by which there will be a saving of about $440,000 in one contract, and $233,000 in the other; or in the whole, some $673,000. There will be naturally under the new arrangement, a tendency to lower the standard of work rendered, which will have to be met by vigilance in inspection.

THE liability of the city of Philadelphia for payment of the warrants issued to Messrs. Struthers' Sons by the commissioners on account of their contract on the new City Buildings has been affirmed by the court. As we understand the opinion of the court, it is that the municipal government of the city is only the agent of the legislature; and that the legislature having delegated its power for a special purpose to the building commission appointed by it, the contracts made by that commission in pursuance of that purpose are as binding on the municipal government as if that government itself had made them. This was in the suit of which we spoke last week, commenced because the representatives of the city, dissatisfied with the way in which the Messrs. Struthers had performed their contract, refused to honor the warrants drawn by the commissioners for the work which they, the commissioners, had accepted. The immediate question, it will be seen, was not concerning the quality of the work, that having been duly accepted by the commissioners, authorized thereto by the legislature, but whether the city authorities, disagreeing to the action of the commission, should escape liability for it. The decision was what might have been expected; and it is to be hoped, that if it should be appealed from, no technicality will upset it. It is very undesirable that governments, municipal or state, should be allowed to suffer wrong; but it is a great deal worse if they are allowed to do wrong.

THE 19th of the coming August will be celebrated in Antwerp as the three hundredth anniversary of the birth of Rubens, though it has not been, we believe, the day commonly accepted as his birthday. In addition to various festivities in honor of the day, the Burgomaster and Council of Antwerp have issued an invitation for a general "Art Congress," the management of which is intrusted to the Royal Artistic, Literary, and Scientific Society of the city. One of the principal topics which it is proposed to lay before the congress is the international recognition of rights in artistic and literary productions. As long ago as 1858 the question was proposed in a congress at Brussels; and in one at Antwerp in 1861, where eight European governments were represented, the subject was very fully discussed, and conclusions accepted which it was hoped might lead to some uniform legislation for the protection of artists in regard to the reproduction and imitation of their works. No legislation of any importance followed, however; and the congress of this year is invited to renew discussion of the subject, in the hope of securing more practical results. The occasion of the congress naturally suggests also the discussion of the life and influence of Rubens; and the decline of what is spoken of as monumental painting is one of the subjects to which special attention is called. The wide range covered by the title of the association to which the planning of the congress is committed makes it seem not unnatural that a wide range of subjects should be offered; one wonders nevertheless how any one congress is to do justice to all the questions that are presented. The questions to be discussed are as follows: —

I. Legislative section. Researches to be made for the basis of an international legislation on which to found the protection of copyright, and the repression of fraud and of imitation of works of art. Questions: What are the proper legal means of securing to the artist the copyright of his works? What practical measures could be adopted to facilitate the proof of counterfeit and fraud? What legal guaranties can be given to musical composers to secure to them their just share in the proceeds of their works? How can the resolutions of the congress be enforced and their application made general?

II. Artistic and philosophic section. What is the importance of Rubens in art, and what has been his influence on our own and foreign schools? What influence has democracy on art?

III. Artistic and economic section. How can greater impulse be given to monumental painting? and can it be brought back to that degree of importance to which it formerly attained, especially in our country? Should public authorities interfere for the encouragement of art? Is centralization useful or injurious in matters of art? Is it not to be desired, in behalf of art and artists, that all the artistic riches of the various establishments which belong to public authorities should be accessible?

IV. Architectural section. Ought each country to repeat in its building the traditions of national architecture? Is it not desirable in our country to revert to the types from the thirteenth to the seventeenth centuries for public monuments and buildings, adapting these types to modern uses? Would it not be well that the civic authorities should have a right to control the architectural style of buildings, especially those which are near monumental structures, so that they might be made to harmonize with them?

V. Historical section. What elements have we for a history of the works of Rubens?

IF the experts, assisted by Mr. F. D. Lee of St. Louis, architect, Mr. Nelson of Evansville, builder, and Maj. Smith, U. S. Engineer Corps, appointed by the Indiana State House Commission, fail to approve one of the four plans selected at the last competition, another competition for the Capitol will be announced in the principal cities of the country.

THE SHAPING OF TOWNS. — II.

ONE of the most serious inconveniences that men are subjected to in our large cities is the necessity of travelling long distances, and spending a great deal of time between their homes and their work. For the New Yorker, for instance, whether he takes a ferry-boat to Brooklyn or Staten Island, or a horse-car to an up-town house, or a steam-train to a suburb up the river, an hour each way is the least time he must allow for his daily transit. New York is the worst of our cities in this respect, and there the waste of time and annoyance thus caused have long been a matter of great complaint, and its remedy of eager discussion; but others of our towns are not greatly better off. To wealthy men whose business does not press them very hard, and who are willing to pay for the charms of a suburban life, the burden is not so great; but to the greater part, who must be at their business pretty early, and make a long day, it is a heavy one. The endeavors that are made to meet the difficulty are all in the direction of quickening the transit, a thing for which thus far no satisfactory means have been found. For cities which are already in this trouble, there is apparently no other relief; but for those which have their growth before them, it is important to consider whether there may not offer some natural ways of avoiding it.

In some cities, of which Paris may be taken as the type, the difficulty is avoided by superposing residence and business premises over pretty much the whole territory, so that there is always a home to be had in or near any quarter to which one's occupation may lead him. It has been the English and American habit, however, to keep the commercial and the residence quarters of a town distinct. In many busy towns this is in some degree a necessity of their sites, but it is also the result of a strong sentiment, so strong in fact that wherever in an American city business gets a foothold upon a street or square, the better class of residents, those who hold to the English tradition of a house to themselves, flee before it as from a pestilence, leaving between it and them a neutral zone of boarding-houses. For people of this temper it is an essential condition in the arrangement of their towns that the residences and the commercial quarters shall be distinct. When there is no natural barrier the tendency of business is to spread itself out thin, and cover a good deal of ground in every direction, so driving habitations far on all sides from the centres of business. We are in the habit of tacitly assuming that any thing which checks or confines this tendency in any direction must necessarily be an injury. Yet it may happen that a barrier which offers some check to the spread of a business quarter in one direction, if it does not fence it to inconvenient crowding, will on the whole be an advantage to a town both by compacting its business into close compass, and by resisting its tendency to drive dwellings into the distance.

One means of combining at once proximity and ease of communication with distinct separation between places of business and dwellings, and a means which is in many respects the most convenient of all, is a difference of level. It is the means, in fact, which secures insulation between house and business with the minimum of distance. This insulation is got artificially in Paris, and in other cities of like arrangement, by reserving the one or two lower stories of the buildings over the greater part of the city for shops and offices, and the upper stories for dwellings which have no connection with the business premises below, so that such cities are stratified, as it were, in commercial and domestic layers. This arrangement is very serviceable, perhaps the most serviceable on the whole, in large towns which have no marked difference of level in their natural situations. It is, however, not in accordance with any habits yet formed in American or English communities; and in a great many towns there are natural differences of level that may be availed of to secure the kind of insulation which Englishmen and Americans prefer, that is, an actual separation of quarters as well as premises, with almost as great proximity as the other system gives. A tolerably abrupt elevation, for instance, of some fifty or sixty feet, or even less, may prove as effectual a barrier as a mile or two of level distance; even more effectual, because more permanent, if it is rightly employed. Such an elevation, high enough to lift the houses on it well above the buildings below, may be compared in its convenience to a promontory or cape running out into deep water. It may, of course, be so placed as to be only an impediment and a disadvantage; but where there is room enough for growth and communication, the bluff that constrains its business plain on one side may be in the end as real a convenience to a town as the water-front that confines it in another. The one, however, being an obstacle which challenges removal, the community is apt to attack it as soon as any of its inconveniences are felt, without waiting for a considerate weighing of its advantages and defects. A strip of elevated land a mile long and half a mile wide, bordering upon the commercial region of a city, might with a proper distribution of inhabitants provide fifteen or twenty thousand people with house-room, where the men of the families could, on an average, walk down to their places of business in ten minutes. Fifty feet of rise would lift this platform above the danger of invasion of trade, while stairs and inclines would make it accessible to foot passengers in a minute or two, and a circuit of only a quarter of a mile would be enough to lift carriages and wagons to double the height.

A great difficulty in the way of this convenience is the unreasoning prejudice against ups and downs. The very man who would think it fortunate to have a house within a mile of his counting-room, and would disregard the hundred feet which his road might rise in that distance, would be very ready to set the pick and shovel at work upon an elevation of a third the height if it lay directly before him, without stopping to think of the mile or two of distance it might save him if he would climb to its top and dwell there. Our forefathers prized such situations and seized them as vantage-grounds; but to us they are intolerable, and exist only to be levelled. All this is at the very time when we are beginning to think nothing of carrying our buildings a hundred or a hundred and twenty feet into the air. The same use of elevators which makes this sort of building worth while will provide an easy way of overcoming differences of level in streets or squares for the weak-kneed or the indolent. It is not altogether a disadvantage that the routes for carriages and traffic have, in such a case, to be separated from those of foot passengers. The circuit of a quarter or a half mile which would be required simply to overcome a height would probably, at first suggestion, appear an intolerable nuisance to a people impatient of circuitous routes; but the same length of road and difference of level between distant points would seem a trifle.

When we leave the points of convenience for business and residence, and turn to salubrity, we find many things in favor of variety of levels in towns. Not only do slopes and elevations give advantage in respect of light, air, and outlook to the houses, but they tell greatly in favor of cleanliness, and of the ventilation and disinfection of streets. We have one large city, Baltimore, in the United States, which prides itself on the surface drainage which its uneven area secures for it, to that degree that it neglects to provide itself with sewerage. Whatever may be thought of this choice, it is clear that if a hilly town can do better than a flat one without subterranean drainage, it has equally the advantage over it, that its sewers will keep cleaner and deliver their contents more freely, and also that the surface of the streets will be more easily cleansed, whether naturally or artificially. Moreover, by providing shafts in the elevated points, the cardinal need of ventilating the sewers can be met to the best advantage. The one public service which is liable to be much impeded by irregularities of level is the water-service, to which elevations are often a difficulty. Nevertheless the introduction of standpipes and high service supplies have overcome this difficulty in all cities where it has been felt to be serious.

We are far from arguing that inequalities of site are necessarily and in all cases a blessing. This would be as unsafe as the converse notion we are combating, that they are necessarily a disadvantage. But we wish to draw attention to the fact that they often have great advantages; and that so far from being looked upon instinctively as enemies, to be got rid of if possible, as we Americans do commonly look upon them, they should be carefully scrutinized for the benefits they may offer, and with the understanding that they may prove to be the best of friends. It is not to be imagined that the inhabitants of Edinburgh or Genoa would find the convenience or comfort of their cities

enhanced, or that any thing but regret would follow, if the heights that engirdle and diversify them were levelled. Yet if sites of equal promise were now occupied for the first time, it is only too likely that the instinct of the day would lead to their being degraded into something as near flatness as engineering could secure, with sacrifice of their native convenience, as much as of their beauty. We have not spoken of the question of beauty, because this is one on which there can hardly be two minds, and because it is beside our present discussion. But the questions of convenience are questions which do not bring their decision as a matter of course, and in which it seems to us the notions that commonly influence people are not well considered. It is a misfortune that questions of business and residence should be so habitually studied apart as they are. In respect of comfort as well as of beauty, they ought to be regarded as parts of the same problem; and the best total result is not to be obtained by giving either of them undisputed and unmodified predominance. The problems which they bring up are problems which concern all people, but which architects by virtue of the bearings upon them of their professional work have especial reason to consider, as by virtue of their training they have special opportunity to study them. In a matter in which not many people have clear convictions, the few who have them may often exercise a controlling influence; and though democratic communities are not apt to make their towns to order, and it is not easy to compel the direction of general growth when every one is his own master, it may be in the power of architects by vigilance and intelligent advice to save a good deal not only of disfigurement, but of more practical injury, to the towns with which they are concerned.

STUDIES OF INTERIOR DECORATION.

XII.

MEMORIAL HALL, CAMBRIDGE.

ANY one who has done us the honor to read these chapters will have discovered that they do not pretend to point out any cheap or easy way of arriving at successful results in matters of interior decoration, and that they are not devoted to the exposition of any mood of antiquarianism, any whim of passion, or any doctrine of æsthetics. Their aim is to show that the great art which so shapes and combines the gross materials of building that they take upon themselves a new significance, and become informed with the spirit of humanity — the art which out of necessity creates beauty — does not stoop from its high calling when it concerns itself with the minutest completion of its own works; that the line of demarcation between architecture on the one hand and the combination of interior forms and colors on the other, by which architecture is brought closer to the sympathies of mankind, is arbitrary and irrational; and that in both the best effects are attainable only by development through processes of analysis and study.

In illustration of this thesis, we have hitherto confined ourselves to domestic examples; and, as their range of suggestion is inexhaustible, we shall probably have occasion again to refer to these more familiar opportunities of art. But after touching upon such commonplace matters as wall-papers, carpets, furniture, hangings, stuffs, and the painting of ceilings, and indicating how even in these the serious study of design may find abundant and fruitful occupation, it seems useful for us to consider whether in more monumental subjects we shall have occasion to employ similar methods of development, or whether, by reason of their more dignified character and larger scale, they will constrain us to enter other regions of thought.

For this purpose it is evidently more instructive for us to take an actual example in which the limitations and requirements are positive, and not assumed for the sake of a desirable conclusion.

Plate X. is a longitudinal section through the hall which has been erected at Cambridge to commemorate the patriotism of the graduates and students of Harvard University who served in the army and navy of the United States during the war for the preservation of the Union. This hall practically serves as a vestibule to the great dining-hall on the west, and to the Sanders Theatre on the east. The section faces the east, and exhibits a portion of the arcade or screen of black walnut which surrounds the hall, and contains, inscribed upon marble tablets, the names of those who fell in the service of their country. Above this screen rise grouped shafts, from the capitals of which spring the ribs of the vaulting. All this portion of the decoration is in ash.

Hitherto the flat wall surfaces, A, of this room have been treated with a light brown tint, and the great bays between the vaulting shafts have been bordered with a single style, B, which extended down to the screen, and was made up of a line of black against the ash, a band of darker brown than the field above noted, edged with a line of black walnut color, and finishing with a separate narrow black line around the panel or field. This arrangement is shown in the upper part of the drawing. Upon the lower part of these panels appeared inscriptions, mostly out of the Latin classics, appropriate to the place, and set forth in mediæval red letters and large black initials.

Within a short time it has been deemed necessary to place in this hall a general dedicatory inscription. This has assumed the form and position indicated in the central bay of Plate X., which shows a white marble tablet similar in character to those below, but of greater size, set in a heavy black walnut frame, surmounting the arcade, and decorated with mouldings, carvings, and statues, the height of the marble tablet being indicated on the frame by angle shafts.

But notwithstanding the architectural devices by which the new tablet was made to grow out of the original substructure, that it might appear an essential part of the composition, it seemed isolated, like an afterthought. The union was evidently not sufficiently complete. At this juncture, no further structural connection seeming practicable, comes the opportunity for the completion of the architectural idea by color.

To remedy the defect of isolation, it now becomes evident that we must make this feature the leading incident in a new belt of decoration, to be carried above the arcade, and across the lower part of all the wall bays, the suggestions for the detail of this belt being taken from the structure of the frame of the tablet itself.

The angle shafts, which, as we have observed, mark upon the frame the height of the inscribed marble, naturally prescribe the width of the main division C of the new belt, and define in six of the wall bays on either side of the hall, the position and size of certain areas, in which the former wall-inscriptions can be redistributed with greater dignity and effect than when they occupied, or rather wandered unconfined in the original unbroken fields of wall. These areas or panels, which thus obviously have their *raison d'être* in the central marble, leading the eye to it, enhancing its dignity, and conferring upon it a fixed instead of an accidental location, are defined horizontally by subordinate belts, D and E, of color. The width and position of these belts are given by the width of the architectural members of the frame with which they correspond; viz., D, by the base on which the angle shafts are placed, and E by the carved corbel which they support. These members are thus in their turn forced into union with the walls.

On either side of the tablet in the central bay there remain, between the belts D and E, two exceptional spaces, to which, on account of their proximity to the tablet, we must evidently give especial interest, without separating them from the rest of the composition or competing with the marble. A diaper-treatment is naturally proposed, and the character of it suggested by a detail of the original decoration. It has been found expedient not to alter the styles, B, of the great bays, as their function of introducing the ash wood of the vaulting to the wall surfaces has been sufficiently well performed, and as any attempt to modify them would render necessary expensive scaffolding, and undesirable fundamental changes of effects. For the sake of unity, therefore, we accept the suggestion made by these styles, B, and extend their lines through the above-mentioned spaces, so repeating and crossing them as to divide these areas into small rectangular quarries. By this contrivance the mutual relations of the old and new work are made so close and obvious that there can be no question of afterthought. In order to give significance to these quarries, each of them is occupied by a cipher (composed of the initial H and a cross), similar to that used outside as a finial to the western gable.

The same diaper, following the lines of the old styles, is repeated to enclose the new panels C at their ends in every bay. The shape of these panels therefore is not accidental, but generated from existing conditions of the problem.

But if these vertical styles, B, were permitted *to cross* the two belts of color, D and E, which form the upper and lower boundaries of the panels C, the connection between these panels and the central tablet, being thus interrupted, would cease to be sufficiently obvious, and the object of this new study of decoration would be in great part defeated. At the same time it is desirable that there should be an *evident* relation between the upper styles and the diaper work. This is a subordinate condition, but one important to be observed. Above the upper belt E, therefore, a horizontal black line, G, is drawn, against which all the lines of the upper styles are stopped. But to soften the transition between the old and new work, and still further to "marry" the lines of the tablet to the wall, we find it expedient to repeat all the lines of the upper styles *horizontally* at H over the upper belt E, crossing the old lines as shown, all these new lines being drawn from corresponding lines of construction in the tablet, where they profile against the wall behind the flanking pinnacles. The new decorations thus contain no lines arbitrarily placed.

Now that we have our system of wall-painting set forth in black and white, let us give life to it by color. Practically the supreme features of interest and usefulness in this whole design are the white marble tablets and what is thereon inscribed in dark red letters. The sharp whiteness of these marbles would defy all attempts at a composition of harmonious color were they not sunk deep in large masses of heavily moulded black walnut with occasional light friezes, K K, of butternut embellished with painted decorations in black and red; and, as regards the lower range of

tablets, were they not relieved by inlays of dark red and gray marbles with sculpture under the points of the arches. Although the white tablets still properly assert their pre-eminence and command the first attention, the deep shadows of the frames greatly soften the harsh transition and prepare for the composition of low neutral tones of color by which we must justify and complete the architectural thought.

As the great tablet must still remain the starting point of our study, we must consider how by color we can assist in uniting this feature with the wall against which it is placed. We have already described why the surfaces on either side of the tablet are diapered with quarries the lines of which are suggested by the styles, B. This of course introduces the colors of those styles, viz., a background of brown crossed by broad lines of black-walnut color, the cipher and thin border lines in the resultant quarries being given in a still warmer and darker brown. These tones, which were originally contrived with a view to softening the transition between the ash of the vaulting and the light brown of the walls, serve this purpose even more sufficiently with the black walnut. The same harmony of low tones appears of course at F F, where these diapers occur in the other bays, as well as in the upper belt H, which forms the lower border or style of the great pointed panels.

But we find the wall still needs *enrichment* by color. We have now only light and dark browns, wood colors, and black; these make a very sober harmony, which however needs to be relieved somewhere with a touch of border color, and the splendor or glory of a stronger contrast. Now in the staircase bays, L L, which are shown on either side of Plate X., we have already a wall treatment of brown red, in order to distinguish the areas devoted to an object of utility from those consecrated to the memorial. To give the necessary enrichment and preciousness to the latter, we are therefore naturally invited to introduce somewhat of this new element of color. If we use this red in the belts D and E, and treat the panels C between them with clear buff as a background for the red letters of the wall inscriptions, the latter will at once become important features of decoration, and have their proper relation with the inscription carved in the marble; both are compositions of dark letters on a light ground, but the painted effect is softer, less decisive, more of a decoration in short, and less insistant to be read. The merely decorative inscriptions moreover are quotations in Latin, while the commemorative inscription is in English.

We have thus an outline or map of color treatment, viz., panels, C, of buff with red Roman letters, — borders D and E, at top and bottom, of red, — borders F, on the sides, of neutral browns diapered. In order to enforce and define the important red belts D and E, we feel that we must edge them with strong black lines, and, to enliven their characteristic color, carry through them, parallel with the black, two shadow lines of red. To soften the contrast between the buff and the borders we enclose the buff panels in lines of black and red. As a last touch, in order to break up the monotony of the many parallel lines of various values which we have accumulated, we distinguish one of the black lines by breaking it into dentils or blocks.

We have thus, we hope, intensified the solemnity of the place, and added to it a new interest of color and surface decoration. We have made the side-walls of the hall more compatible with the splendors of the stained glass which fills the ends, and the wall inscriptions have become an essential part of the design. But in view of the immediate object of this writing, it is more important to observe that a purely architectural problem has in this manner been solved by the brush alone, all the details of its work, whether of line or color, having been developed from essential conditions as directly and as severely as if we had been dealing with a study of architectural forms and masses.

THE ILLUSTRATIONS.

DETAILS FROM MEMORIAL HALL OF HARVARD UNIVERSITY, CAMBRIDGE, MASS. MESSRS. WARE AND VAN BRUNT, ARCHITECTS.

(2 Pemberton Square, Boston, Mass.)

THIS plate presents the interior elevation of the west end of the great dining-hall, which, above the wooden screen work, is lined with ornamental face brick and tiles; also a portion of the vestibule hall, showing entrance to dining-hall, the gallery over the entrance, and the arrangement of the memorial tablets; also the stone finial of the west gable, and the details of the copper gargoyles of the tower.

This drawing, as well as the drawing of the Hunnewell Building, which was published in our last number, is one of the series prepared for publication by the Portfolio Club, of which we have already printed several, and of which we expect to publish the rest at intervals.

ST. FINBARR'S CATHEDRAL, CORK. VIEW OF CHANCEL FROM NORTH TRANSEPT, SHOWING BISHOP'S THRONE, STALL, SEDILIA, ETC. MR. W. BURGES, ARCHITECT.

The completion of this cathedral is now rapidly advancing, a contract having been made to build the three towers and spires; in fact, the two western spires are well advanced. The external carving has also been undertaken. In the interior great progress has been made, and the carving is now completed. The first two stages of the bishop's throne are in hand, and the whole will probably be finished as a memorial to the present bishop of Cork. The plan of the throne is a square, upon which is placed canopy-work in the form of an irregular octagon, under which two carved angels will support a shield. Above will be a second stage of canopy-work and the carved figure of St. Finbarr. The whole will be enriched with carving and diaper-work. The material will be oak stained to a rich color, and emphasized here and there by a little gilding.

The illustration of the bishop's throne and the accompanying description are taken from the *Architect*.

FIREPLACE IN THE DINING-ROOM, OSSEO LODGE, W. VA. MR. CARL PFEIFFER, ARCHITECT.

(113 Broadway, New York, N.Y.)

THE WALLS OF THE WINNEBAGO COUNTY COURT-HOUSE, ROCKFORD, ILL. MR. H. L. GAY, ARCHITECT.

(90 La Salle Street, Chicago, Ill.)

STUDY OF INTERIOR DECORATION. — PLATE X.

See the article above.

LIGHT: ITS SANATORY INFLUENCE AND IMPORTANCE IN BUILDINGS.

[Read before the State Charities Aid Association, May 25, 1877, by Mr. Carl Pfeiffer.]

MR. PRESIDENT, LADIES AND GENTLEMEN, — Architecture is perhaps the most many-sided of the arts, and stands in the most intimate relationship, not only to all its fellow arts, but also to all its fellow sciences, for architecture is as much a science as an art. It has all the elements of sculpture, only that it does not have for its object the representation of the human body, but merely the habiliments, so to speak, or the outward clothing of that body.

While thus related to the arts, borrowing beauty from all of them, architecture turns to science for wisdom, without which, indeed, beauty were of little avail, even if it could at all exist. Mathematics, physics, mechanics, and engineering in nearly all its phases, have to be studied by the architect. The importance of the connection between hygiene and architecture cannot be overestimated, especially when we remember that so far as statistics reach back more than one-third of the human race die before reaching the age of five years, whilst according to M. Flourens, the great French investigator on this subject, the average duration of life should be one hundred years, and that this terrible mortality, while it reveals the inefficiency of the drug-store, no less clearly points out the neglect of architecture in its hygienic character. Architecture is just beginning to show that by making each dwelling-house a real sanitarium, disease will be not so much cured as prevented, — prevented at least, as far as possible, for the architect's hygienic power extends only to the dwelling. He recognizes as one of the chief problems of our times the urgent necessity of providing healthy homes for the people.

To accomplish this hygienic task he calls into service the two great agents of the world's whole being, the sources of all life on earth, and symbols of the eternal life beyond, — heat and light. He studies these wonderful phenomena in all the various appearances which they put on, and tries to discover the best mode of introducing them into and properly distributing them in the artificial habitations he has erected for man, and thus takes man from the cold and sickliness of his primitive huts to the warmth and health of a well ventilated and heated dwelling.

Concerning heat and its relation to the distribution of a properly tempered, pure atmosphere throughout our dwellings, in other words, concerning the subject of ventilation, I have already spoken on a previous occasion. I will therefore eliminate it as much as possible from the present, and speak here only of light, and chiefly of light in its hygienic relation to architecture.

I do not propose to enter the pitfall of unprofitable speculation, but shall consider merely the natural light in so far as it relates to architecture and hygiene. And here I may as well touch at once the main point of the relation of architecture to the science of light, by humbly acknowledging that of all men who have contributed to the development of our art, there is no one who deserves more our gratitude than the glass-maker, who first enabled the builders of dwelling-houses to furnish mankind with light, warm, and cheerful homes, in place of dark, cold, and dismal huts, or chilly palaces. The window is the second eye of man, without which the dwelling-house would be simply a kennel or a cave. Many new and wondrous things have been discovered in regard to this same glass, even within these past few years. A Frenchman has made it malleable. Gen. Pleasanton, by painting every eighth pane of his conservatory, has made it so fructifying to plants and animals that if his statements prove true, and his "discovery" generally applicable, this whole earth of ours will soon be overrun with living organisms; and poor Malthus, who thought even our present increase of population dangerously

large, will turn in his grave with vexation and despair. Nay, has not Mr. Shove proposed to make use of this wonderful material for effecting what none of the numberless schools of medicine have as yet been able to effect, — the utter banishment of disease from this planet of ours? — with sanitaria such as he sketches for us, with glass houses of so vast an extent that each covers forty acres of ground, filled with the most varied kinds of plants, flowers, vines, and trees, laid out on the plan of the most luxurious parks, and high enough for the erection within the grounds of hotels, schools, libraries, etc., wherein ten thousand people may every winter season enjoy the delights of a perpetual spring and summer climate, undisturbed by changes of weather and the like nuisances of out-door existence; wherein no "probabilities" are tolerated, the thermometer being established as the only trustworthy weather-cock.

However, every thing has its limits of utility, even glass, in its relation to health; and it is the architect's special business to investigate those limits. Not all glass, in its function of transmitting light, is of equal value: it may be too thin or too thick, or the material of which it is made may have been mixed with injurious substances, or badly solidified. It may be placed in the wrong position, and become a constant source of irritation, or there may be too much of it, etc. I desire to call particular attention to these injurious qualities which light may exercise in passing through glass, as it is a subject hitherto almost entirely neglected.

Have you not often noticed the peculiar heating and oppressive effect made upon you by sunlight that has passed through the thick French plate glass now so general in use? It is a feeling very much akin to that experienced on a sultry, sunny, *electric* summer day, before the storm has gathered. You do not feel it when you open the window and stand in the free sunlight, nor is it perceptible through every kind of glass. But this thick plate glass invariably produces it, especially when the rays of the sun fall upon it in an oblique direction, and in the winter time. It would seem evident that the heat rays and the magnetic rays which light produces in its transit through our atmosphere gain the preponderance over the pure light rays by passing through the glass, and, destroying the equilibrium, injure our health. A window, again, with a number of small panes, especially if the panes are of uneven and coarse glass, makes you giddy by the unevenness of the rays that cross each other from pane to pane; and the same objection would apply to a house built with glass alone, such as Mr. Shove dreams of. A similar effect is produced, indeed, by reflected light of every kind. Hence the necessity of regulating the color of the walls in a room with regard to the number and position of the windows, of avoiding placing mirrors in such a position that the light falls upon them, etc. All reflected light has an injurious effect; not upon the body only, but also upon the mind. I cannot understand, therefore, why Sir David Brewster, who otherwise is so judicious in his remarks on this subject, should suggest: —

"The opposite sides of the street or lane should be kept whitewashed with lime; and for the same reason the ceilings and walls of the apartments should be as white as possible, and all the furniture of the lightest colors."

For the whitewashed houses on the opposite side of the street must necessarily cast their reflected light through the windows on the other side, and the extremely white ceilings and walls there would only make matters worse. This remark, of course, applies only to streets that admit sunshine; for in dark streets or rooms such whiteness may be not only allowable but absolutely needful and healthful. I intended simply to point out the necessity of avoiding extremes, and to call your attention to the care which the architect must take in regulating the light as well as the heat of his building. That dark streets, alleys, cellars, rooms, etc., may stand greatly in need of light-beams, is thus very neatly exemplified by Dr. Brewster: —

"In all great towns, where neither houses nor palaces can be insulated, there are in almost every edifice dark and gloomy crypts thirsting for light; and in the city of London there are places of business where the light of day never enters, and where the precious light which the sky sends down between chimney-tops is allowed to fall useless on the ground. On visiting a friend whose duty confined him to his desk during the official part of the day, we found him with bleared eyes struggling against the feeble light which the opposite wall threw into his window. We counselled him to extend a blind of fine white muslin on the outside of his window, and flush with the wall. The experiment was soon made. The light of the sky above was caught by the fibres of the linen, and thrown straight upon his writing-table, as if it had been reflected from an equal surface of ground-glass. We may mention another case equally illustrative of our process. A party visiting the mausoleum of a Scottish nobleman wished to see the gilded receptacles of the dead which occupied its interior. There was only one small window through which the light entered, but it did not fall upon the objects to be examined; upon stretching a muslin handkerchief from its four corners, it threw such a quantity of light into the crypt as to display fully its contents."

This reflected light thrown into a dark room from a white handkerchief or a white screen is not hurtful, simply because it is, in point of fact, not reflected, but direct light; or, in other words, the source of the light in the dark room: it is just as if a lamp or candle were lit in the room. But that the *reflected* light from the white walls of a room which is itself lit up by direct light has a disagreeable effect, every one can easily test for himself. I quote, however, from Miss Nightingale's "Notes on Nursing": —

"Who has not observed the purifying effects of light, and *especially of direct sunlight*, upon the air of a room? Here is an observation within everybody's experience. Go into a room where the shutters are always shut (in a sick-room or a bed-room there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air, — of air, i.e., unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. The cheerfulness of a room, the usefulness of light in treating disease, is all-important.

"Heavy, thick, dark window or bed curtains should, however, hardly ever be used for any kind of sick in this country. A light, white curtain at the head of the bed is, in general, all that is necessary, and a green blind to the window, to be drawn down only when necessary.

"'Where there is sun there is thought.' All physiology goes to confirm this. Where is the shady side of deep valleys, there is cretinism. Where are cellars and the unsunned sides of narrow streets, there is the degeneracy and weakliness of the human race, mind and body equally degenerating. Put the pale, withering plant and human being into the sun; and, if not too far gone, each will recover health and spirit.

"*It is a curious thing to observe how almost all patients lie with their faces turned to the light*, exactly as plants always make their way towards the light. A patient will even complain that it gives him pain 'lying on that side.' — 'Then why *do* you lie on that side?' He does not know; but we do. It is because it is the side towards the window.

"A fashionable physician has recently published in a government report, that he always turns his patients' faces from the light. Yes, but nature is stronger than fashionable physicians; and, depend upon it, she turns the face back, and towards such light as she can get. Walk through the wards of a hospital, remember the bedsides of private patients you have seen, and count how many sick you ever saw lying *with their faces towards the wall*."

And why do they not turn their faces towards the wall? Because if it does give light, that light is reflected, and hurts them, even when it has to pass through their eyelids; and if it does *not* give light, they turn from it to hunt up light. The all-overpowering delight of the patient, and indeed every health-desiring human being, however, and the sweetest treat for the eye itself, is to be able to look through the direct light of God's atmosphere into the blueness of the sky, that most wonderful mixture of darkness and light, — that dark background of the infinite, lit up with the clearness of light to the very shade suited to human eyes. I cannot forbear to illustrate further the importance to architects of obtaining this direct communication with light and the sky in all the rooms of their buildings, than by quoting again from Miss Nightingale: —

"Second only to fresh air, however, I should be inclined to rank light in importance for the sick. Direct sunlight, not only daylight, is necessary for speedy recovery, except perhaps in certain ophthalmic and a small number of other cases. Instances could be given, almost endless, where in dark wards, or in wards with a northern aspect, even when thoroughly warmed, or in wards with borrowed light even when thoroughly ventilated, the sick could not by any means be made speedily to recover.

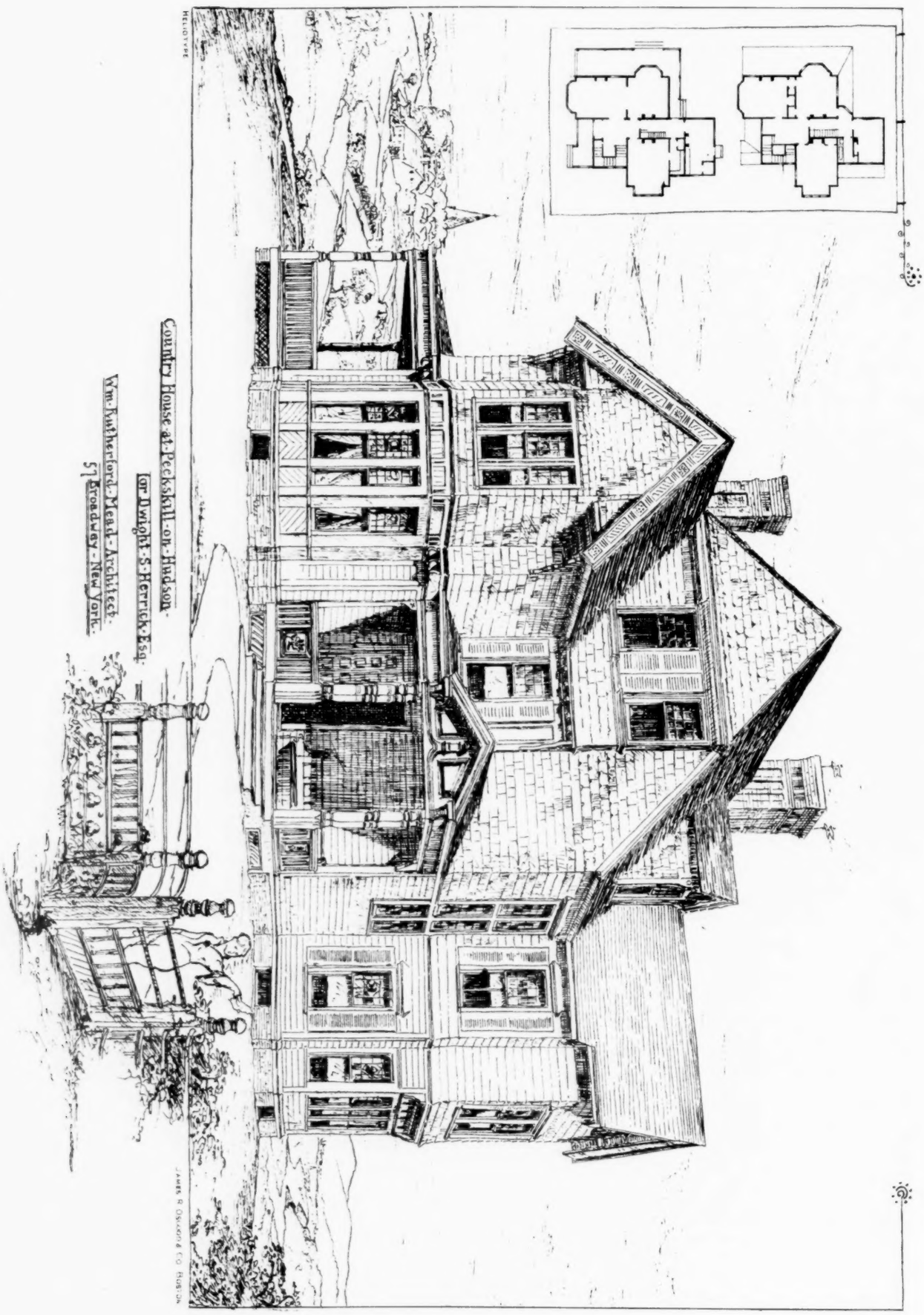
"Among kindred effects of light, I may mention from experience, as quite perceptible in promoting recovery, the being able to see out of a window, instead of looking against a dead wall; the bright colors of flowers; the being able to read in bed by the light of a window close to the bed-head. It is generally said that the effect is upon the *mind*. Perhaps so; but it is no less so upon the *body* on that account.

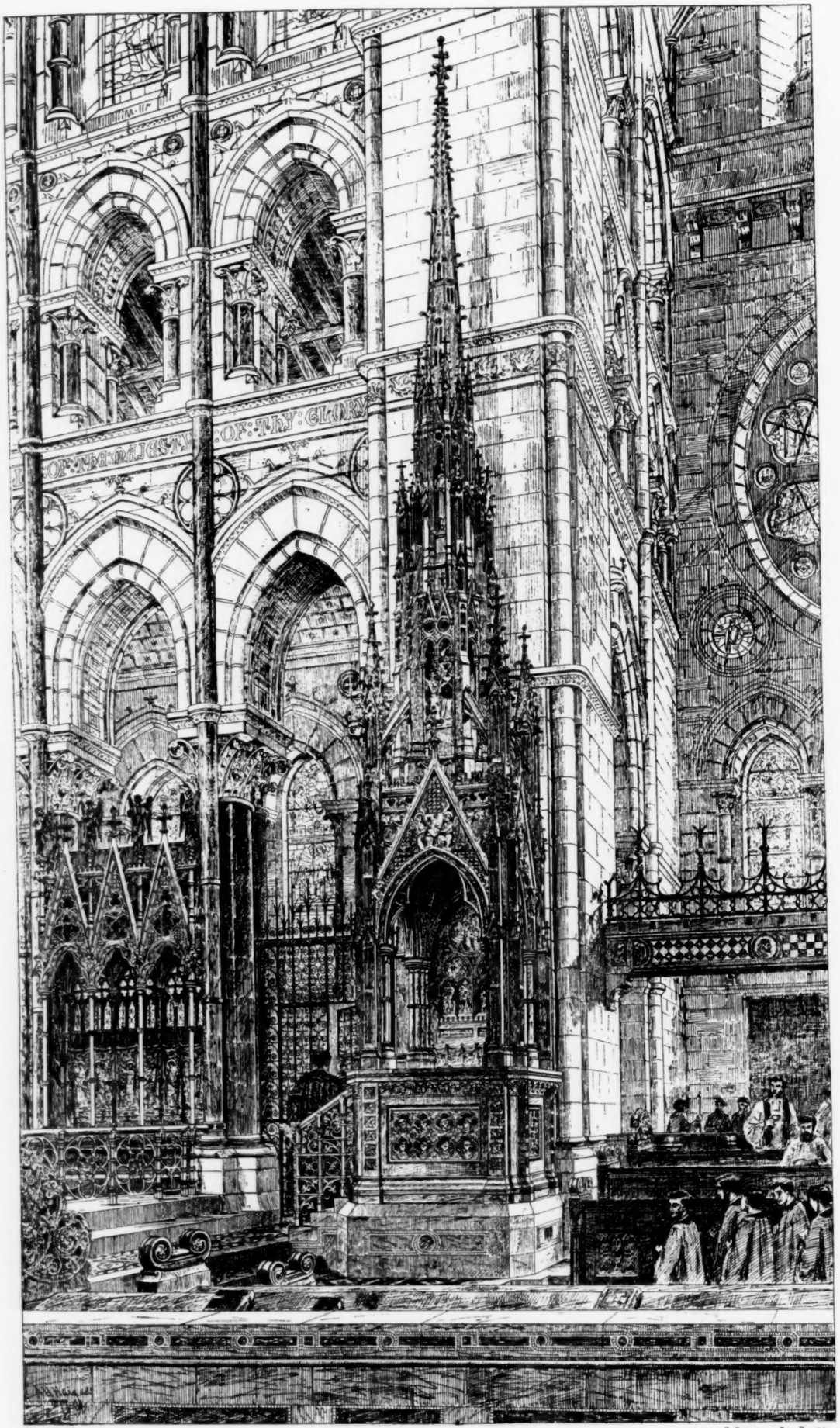
"All hospital buildings in this English climate should be erected so that as great a surface as possible should receive direct sunlight, — a rule which has been observed in several of our best hospitals, but, I am sorry to say, passed over in some of those most recently constructed. Window-blinds can always moderate the light of a light ward; but the gloom of a dark ward is irremediable.

"The axis of a ward should be as nearly as possible north and south; the windows on both sides, so that the sun shall shine in (from the time he rises till the time he sets) at one side or the other.

"There should be a window to at least every two beds, as is the case now in our best hospitals.

"Some foreign hospitals, in countries where the light is far more intense than in England, give one window to every bed. The window-space should be one-third of the wall-space. The windows should reach from two or three feet of the floor to one foot of the ceiling. The escape of heat may be diminished by plate or double glass. But while we can generate warmth, we cannot generate daylight or the purifying and curative effect of the sun's rays."


Country House at Peekskill on Hudson
for Dwight S. Herrick Esq.
Wm. Rutherford Mead Architect
57 Broadway New York.



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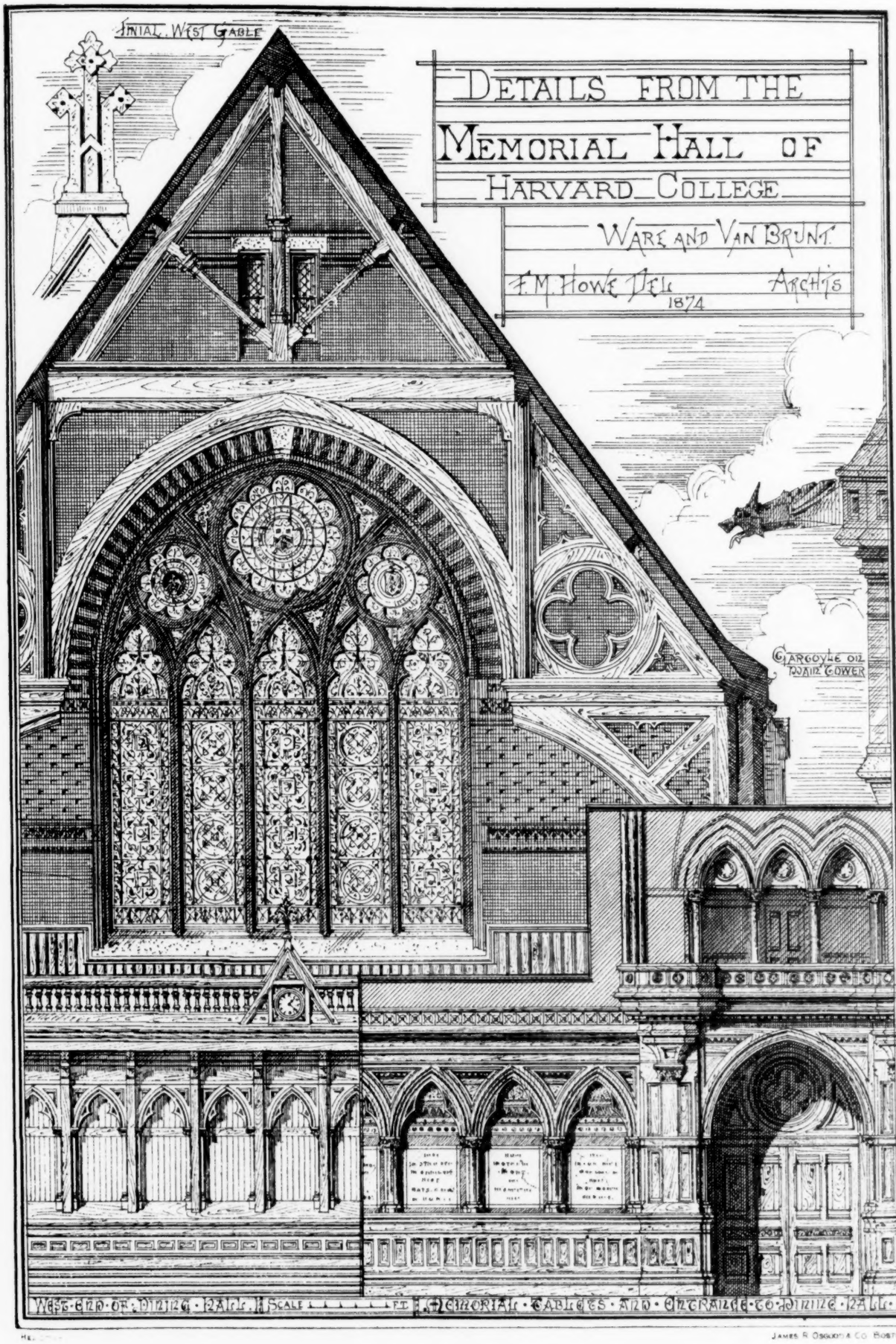
BISHOPS THRONE NOW BEING ERECTED IN CORK CATHEDRAL.
W. BURGES, ARCHITECT.



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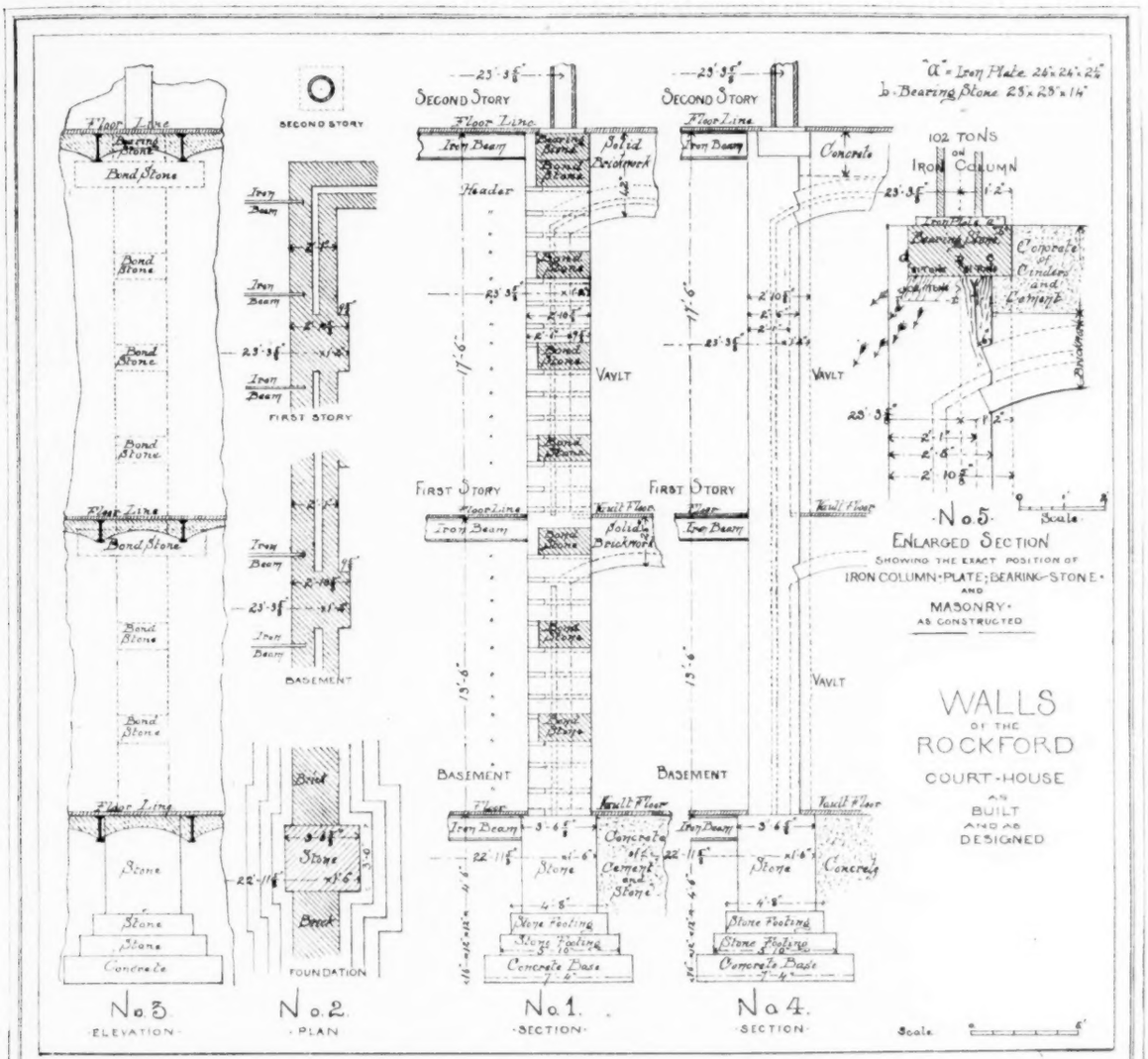

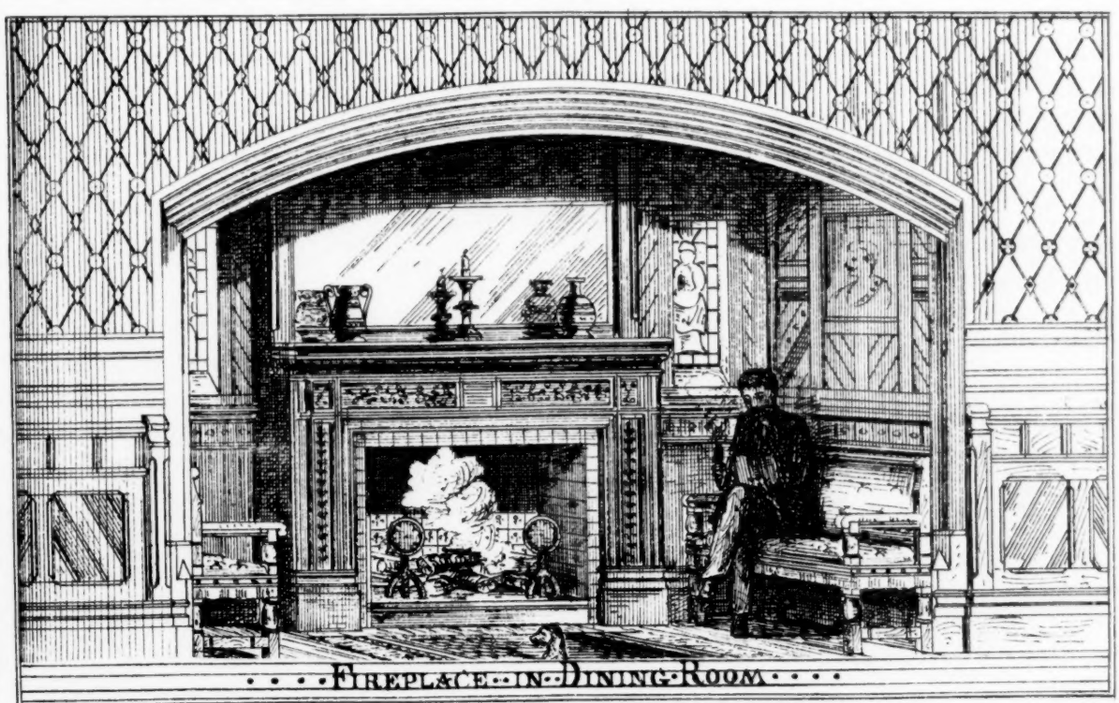

FIREPLACE IN DINING ROOM

OSSEO LODGE WEST VA CARL PFEIFFER, ARCH.T

HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

What Miss Nightingale here says about the employment of plate and double glass is quite correct, so far as the production of more heat is concerned; which, however, is not caused because the thickness of the glass prevents the escape of heat from the room, — as may be shown by letting fresh air into the room from other openings, — but because that kind of glass passes more of the heating, and especially of the actinic, or magnetic, or electric rays of light into the room, or generates those qualities of magnetism, etc., in passing it. For, as M. Emile Saigney, the eminent French writer, clearly puts it, "all forms of light exhibit three kinds of rays, — those which are purely luminous, those which are also calorific or heating, and those which are chemical or magnetic. And I may here add a fact, which will explain the difference in the light transmitted through different kinds of glasses. The purely luminous rays of light we of course never see, precisely because they are light, and we can only see color; but we feel them, and see by means of them. Now of the other rays of the spectrum, or of the colored light, it is generally known, that the yellow, orange, and red rays are specially heating, while the blue, indigo, and violet rays are especially magnetic; but it is not so generally known that the maximum of heat is found in the dark region beyond the red, and that those which are refracted upon the other side, beyond the violet, have a special aptitude for exciting chemical action.

I do not propose to enter into an examination here as to why the so-called dark or invisible rays of light, in its appearance to us, should possess these different qualities in a pre-eminent degree: I merely propose to suggest that every different kind of glass may change the relation between the luminous, calorific, and chemical rays, even as the prism — to which all glass is more or less alike — changes it.

Thus, if a solar ray be received upon a prism of water, the maximum of heat will appear in the yellow, upon a prism of common glass in the red, upon a prism of flint glass beyond the red, upon one of rock salt far beyond the red in the entirely dark portion.

Now it may very well be, nay, unquestionably is a fact, that in the case of some (invalid) persons a superabundance of electric rays may be beneficial for health, and excite a feeling of pleasure; and this is the fact upon which Gen. Pleasanton has built his "blue light" theory.

I think the overwhelming majority of facts — not to speak of the natural supposition that if we needed more indigo in our light it would be there — confirms Miss Nightingale's statement of the vast superiority of pure sunlight coming direct from the blue sky and changed as little as possible by the windows through which it passes. If shading is needed, shutters or curtains can be made to act as the eyelashes of the window, and like them keep away a superfluity of light; and if properly constructed so as to allow a change of colors, all the benefits peculiar to the divers kinds of light-rays can likewise be obtained. Those who are suffering from any form of mental irritation or nervousness, for instance, can place themselves under the influence of neutral tints, blue, violet, etc., while the dull, indolent, and depressed may derive benefit from the stimulating colors of red and scarlet. Miss Nightingale seems to think that "shutters should never be shut in a sick-room or bed-room;" but this, I fancy, is only an exaggerated statement, or perhaps made with special reference to the dark atmosphere of England. Extremes are always to be avoided. There may be days or hours when there is too much light in a room, and too much light is also dangerous; it is not only apt to produce partial or total blindness, hemeralopia, violent disarrangement of the nervous system, etc., but even insanity and death. The tyrant Dionysius, who was aware of the terrible torture produced by an intense degree of light, especially when reflected, inflicted on some of his unhappy prisoners the dreadful punishment of compelling them to pass rapidly from great darkness to the full blaze of the sun in *recently white-washed rooms*. Let us therefore, by all means, furnish our buildings with abundant provisions for the entrance of light: but at the same time let us not neglect to provide for its control whenever it is likely to become excessive, — by means of the shutter; and for its purification, as it were, whenever the composition of its rays is not in harmony with the eye, — by colors.

Let us deal with light just as we do with heat, — supply enough of it, but never in excess, and purify it by ventilating-apparatus in every room of the house.

There is one class of buildings to which this applies particularly, — our schoolhouses. No other buildings stand so much in need of pure air and sufficient warmth, or ventilation, and of an abundance of pure light properly arranged with a view to its fall on the pupils' eyes.

For not only are the eyes of the children exceptionally tender, but being compelled to pass the most of their school time in a more or less bent position, however scientifically the school furniture may be arranged, and to strain their eyes by looking upon the white paper in most of their studies, these children require that special attention be paid to the arrangements made for the introduction of light into their rooms and its proper shading, when from the changed position of the sun or other causes this becomes necessary.

Their play-grounds, on the other hand, cannot be too open to the solar light; a rule of hygiene that many of our public schools sadly overlook, and which public and private institutions deliberately and constantly violate, by erecting high walls around the grounds of their institutions, as if the sun were the deadly enemy of mankind instead of its best friend. The effects of such a dark, enclosed playground on school-children, and the contrary effects of full exposure to sunshine, are thus happily described in an old number of the *Pall Mall Gazette*, by Dr. Winter. He says: —

"Passing round St. Paul's churchyard the other day, our ear caught a low confused sound which seemed to issue from behind a grille under the gloomy portico of St. Paul's school. Attracted by so unusual a sound, and blinded for a moment by passing from the sunlight under the portico, we at length made out that the sound was that of boys' voices in play. After a little time, when our eyes had been accustomed to the darkness, we perceived that some score of boys were actually at play within its unhappy shade. Such a profound sanatory error on the part of the authorities of the school, to shut up their youth in a cage without light or air, and there bid them play, struck us with some astonishment. Boys at their games are like young birds singing on the bough; half their joy is the result of the influence of the sunny air. We are told, indeed, that only a very short time is spent in this gloomy retreat: but surely it is hard that the hour of recreation, when academic art should give way to nature, should be selected for this depressing process as at present carried on. What would Dean Colet have said to it?

"When the St. Martin's national school, leading out of Endell Street, was built some years ago, we noticed with pleasure that a playground was built *at the top of the school*, where light and air were plentiful, conditions essential in a playground where the children use violent exercise; but this example, we are sorry to see, has no effect upon the Mercers Company. The necessity of light for young children is not half appreciated. Many of the afflictions of children, and nearly all the cadaverous looks of those brought up in great cities, are ascribable to this deficiency of light and air. When we see the glass rooms of the photographers in every street high up on the topmost story, we grudge them their application to a mere personal vanity. Why should not our nurseries be constructed in the same manner? If mothers knew the value of light to the skin in childhood, especially to children of a scrofulous tendency, we should have plenty of these glass-house nurseries, where children may run about in a proper temperature, free of much of that clothing which at present seals up the skin — that supplementary lung — to sunlight and oxygen. Glass-house nurseries lifted up to the topmost story would save many a weakly child that now perishes for the want of those necessaries of infant life."

Great benefit to the health would accrue by giving children what the ancients termed *solaria*, or "solar-air baths;" that is, permitting them to lie naked upon the bed or floor, free from the incumbrance of swaddling clothes, so that their bodies may be thoroughly brought under the influence, for some period of the day, of good air and bright sunlight.

Playgrounds and gardens arranged on the top of such buildings as schools, hospitals, and even of private dwellings, etc., are, indeed, beginning to grow quite in favor, and in a large city — where ground is often the dearest part of those public buildings — can scarcely be dispensed with. "Some years ago," says Dr. Winslow, "when visiting the great Hospital of St. John at Brussels, I was much impressed with the most judicious hygienic arrangements made in the construction of that building for the health and comfort of the invalids. On the roof of the hospital an elegant garden is laid out with great taste, and planted with shrubs, small trees, and a grass lawn, interspersed with pretty and sweet-smelling flowers. It is, in fact, a *Parc de Monceaux* in miniature. In this quiet rural retreat, patients, particularly the convalescents, are permitted at certain hours of the day to promenade, indulging in the luxury of good air and bright sunlight."

Still more objectionable, however, than these enclosures of playgrounds put up for the special purpose of excluding sunlight, are those human habitations into which under any circumstances sunlight finds it impossible to penetrate; for while those playgrounds have at least access to the open air, being unroofed, the latter habitations have no access to pure air at all, but are on the contrary constantly filled with the foulest atmosphere. I allude, of course, to the cellar dwellings which in our large cities abound so plentifully and pitifully, and especially to those which are the dwellings of the worst classes of our population. All the murderers that may inhabit them are not a hundredth part as destructive of human life as these their dismal dens themselves. On a former occasion I have pointed out their destructiveness of life, with reference to the want of ventilation and pure air, and to the constant entrance, which they permit, of the poisonous gases that penetrate from the sewers and gas-pipes of the street into them.

But now I wish to add that even the most bountiful provisions for the exclusion of those poisonous gases, and for the admission of pure air, could not atone for the want of light. Truly does Sir David Brewster say: —

"If the light of day contributes to the development of the human form, and lends its aid to art and nature in the cure of disease, it becomes a personal and national duty to construct our dwelling-houses, schools, workshops, factories, churches, villages, towns, and cities, upon such principles and in such styles of architecture as will allow the life-giving element to have the fullest and the freest entrance, and to chase from every crypt, cell, and corner

the elements of uncleanness and corruption which have a vested interest in darkness."

But as houses are built now it is next to impossible to bring light into these underground rooms of our cities, even by adopting such artificial means as the white screens of which we have spoken before; and it is absolutely impossible to fill them with direct sunlight.

"Rightly recognizing the life-giving and health-sustaining influence of this light," says Dr. Winslow in his work on *Light and its Influence on Life and Health*, "the 'Towns Improvement Clauses Act of Scotland' enacted that no cellar less than seven feet high, without a window, and of which more than two-thirds are below the level of street, should be inhabited. Acting upon the authority of this statute, the corporation of the city of Edinburgh has considerably improved the physical condition of the working classes of that town by peremptorily closing 3,000 dreary, sunless dens, in which the poor people were in the habit of residing." The same authority adds, "It was computed not many years ago, that in Liverpool between 30,000 and 40,000 people lived in cellars. As a consequence of this state of things, the health of the working classes became seriously affected. Legislative measures were adopted for the purpose of declaring such habitations illegal, and those living in them were ejected by the strong arm of the law. In 1849, 4,700 cellars were cleared of 20,000 inhabitants."

I may add that in Germany also numerous efforts have been made of late to prohibit the inhabitancy of cellars altogether. But no city in the world, I believe, is so cursed with dens as the city of New York; even as it ranks pre-eminent amongst cities for the barbarous character of its tenement-houses, of which I now propose to say a little. In a recent sermon Dr. Tyng stated, that in the more crowded districts of New York there are 200,000 to the square mile, or 120,000 more than are packed in the same space in any part of London. More than seventy-five per cent of the mortality in these tenement-houses, he added, was of children.

It may be well here to bear in mind the words of Charles Dickens, who wrote: "Of all the coffins that are made in London, more than one in three is for a little child." Is not this a state of things so frightful as to require the most stringent interference of the law? But all the attempts hitherto made by our Board of Health to control the construction of buildings with a view to prevent at any rate the main cause of this wholesale assassination of our population, have been opposed, owing chiefly to the insuperable objection of our people to the least interference with individual freedom. It is argued, that if a man has the necessary money to pay for it, he is at perfect liberty to put up any kind of a house, tenement or otherwise, though he have it so constructed as to make every room in it a Calcutta Black Hole; and that those who rent the rooms of him have only themselves to thank for the consequences.

I say he has no such right. He infringes not only upon the right of his tenants, but, in our case, of every citizen of New York, since he assists in the spreading of all kinds of disease and crime. He is in point of fact no less a murderer than is the direct poisoner, for he erects laboratories that of themselves produce poison; and were it but for our own sake, it is time that an end should be put to this horrible occupation.

You will undoubtedly concede that in what I have said on the importance of constructing all human habitations in such a manner that each part thereof may be accessible to a sufficiency of light, and if possible of direct sunlight, I have not allowed myself to become one-sided in my plea. I have admitted, what is indeed self-evident to any observer, that we may have too much light, or special occasions may call for the shading of light or for giving predominance to special colors, and that hence the architect must also provide for these contingencies. Indeed, every climate requires that its architecture should conform in its arrangement of windows, etc., to the quantity and quality of the light which that climate possesses, as well as to its temperature. The aim of the architect in this direction must be, as I have said, so to arrange his buildings that they will supply a sufficiency of light and heat, and yet keep both light and heat under perfect control.

Let us, then, by avoiding extremes, not only pursue the right path, but also pave the way for it amongst the public. Nothing is more difficult than to introduce a change in a man's modes of thought and living when that change is advocated by extremists. It has been established by careful observation, that where sunlight enters all the rooms of a dwelling, the inmates are less liable to sickness than in a house where the apartments lose its health-invigorating influences.

I fear that this fact is not sufficiently borne in mind in the construction of the so-called apartment houses. Many are being built with bed-rooms into which direct sunlight never enters; they receive "borrowed" light only from shafts called "well-holes." Such arrangements ought to be prohibited by law. Such apartment houses will, no doubt, increase the mortality among children, and contribute to the degeneracy of those who grow up within their walls.

Sir James Wylie, late physician to the Emperor of Russia, attentively studied the effects of light as a curative agent in the hospitals of St. Petersburg; and he discovered that the number of patients who were cured in rooms properly lighted was four times greater than of those confined in dark rooms.

In all cities visited by the cholera, it was universally found that the greatest number of deaths took place in narrow streets and on the sides of those having a northern exposure, whence the salutary beams of the sun were excluded.

The Romans seem to have had a greater appreciation of the sanatory effects of sunlight than we have in this country at the present day; they had a building-act in the time of Augustus, restricting the height of street fronts. It seems to me that such a law ought to be enacted for this city. They exist in the large cities of Europe; there the height of buildings is regulated by the width of the streets, and no one is permitted to deprive his neighbor of a sufficiency of sunlight. I wish I could enlist the interest of the gentlemen of the press to advocate a reform in these matters in this city. Buildings of such inordinate height as are on the north-east corner of Spruce Street and Nassau Street, on the south-east corner of Fulton Street and Broadway, on the north-west corner of Fifth Avenue and Forty-second Street, and many others of similar height, ought not to be permitted.

Florence Nightingale observes: "A dark house is always unhealthy, always an ill-aired house. Want of light stops growth, and promotes scrofula, rickets, etc., among the children. People lose their health in a dark house, and if they get ill they cannot get well again in it."

Dr. Edwardes of Paris says the action of light tends to develop the different parts of the body in that just proportion which characterizes the species; and that, in warm climates, the exposure of the whole surface of the body to the action of the light will be very favorable to the regular conformation of the body. Humboldt confirms this in the account of his voyage to the equinoctial regions: he says, "Both men and women (whose bodies are constantly inured to the effect of light) are very muscular, and possess fleshy and rounded forms. It is needless to add that I have not seen among these people a single case of natural deformity."

In truth, the light and heat and chemical influence of the sun's rays may be considered as the physical cause of all vital power. The inestimable value of light as an element in the preservation of health, and treatment of disease, should be fully appreciated in the construction of all streets and buildings, particularly those intended as habitations for the poor, or public hospitals for the treatment of disease.

At the present day it is entirely too soon to take extreme ground on any phase of the light subject. It is a subject which, in its practical phases, is but just undergoing experiment and observation. If I have in any way contributed to direct more special attention to its relation *to health in dwellings*, and therefore to architecture in general, I shall feel quite satisfied with my efforts.

In conclusion, permit me to add yet a few words of an eminent physician: "Let the sun come into our dwellings, and let our chambers be on the sunny side of the house. A room that the sun is not permitted to look into at all should be without a door; it is unfit for human occupancy. Even the flowers will grow pale and be frightened to death in it. The primary object of a window is not for the sons of men to look out, but for the sun to look in.

"Pleasant sunshine not only brightens a man's buttons, but his heart; it makes his spirit as cheerful as the landscape: he cannot be happy without it."

CORRESPONDENCE.

THE STEWART MEMORIAL CHURCH.

NEW YORK.

THE Stewart Memorial Church at Garden City, L.I., the corner-stone of which was laid on the 28th inst., has been the centre of no small amount of speculation, because of the meaningless air of mystery which has been thrown about the whole enterprise. At first it was intended to have it merely a memorial chapel on a small but elaborate scale. As the work went on the ideas of the donors enlarged, and now it is intended that the building shall be finished as a cathedral, under the name of the Cathedral of the Incarnation for the diocese of Long Island P. E. Church.

The church is cruciform in plan, having a tower with a spire over the main entrance. The plan shows nave, aisles, transepts, choir, and chancel. Exteriorly the construction will be in Belleville, N.J., stone above the water-tables in 12-inch courses with fine bush hammered faces and 1½-inch tooled margins; joints nowhere to exceed $\frac{1}{16}$ inch. The basement walls in granite, mouldings throughout are to be fine-rubbed. The height to the cornice of the aisles will be 32 feet, to the nave cornice 48 feet, to apex of main roof 71 feet. The extreme length from front face of tower to outside walls of chancel will be 150 feet, and extreme width from north to south transept porches 96 feet. Within the plan shows a nave 24 feet wide and aisles 12 feet; the transepts are to be 48 feet wide and project 12 feet from aisle face. The choir will extend 12 feet, and the chancel, which is nine-sided, will be 24 feet wide and 20 feet deep. At the angles of the choir and transepts octagonal rooms each 15 feet in diameter have been fixed, that on the right side as a vestry-room and that on the left to be occupied by the great organ. The main lobby under the tower will be 15 feet square; and before either of the transept entrances porches about six feet square have been fixed. The height of the tower will be to base of tower

gables 77 feet, to top of same 117 feet, and to top of spire 195 feet 9 inches. The style mainly followed is the decorated Gothic of the thirteenth century, but there are so many variations and innovations introduced that this style remains only in a general way. One of the striking features on a first look at the church is the manner in which the tower and spire have been treated. The attempt has been to preserve an unbroken outline from the ground to vane. The sloping of the buttresses, the angle of the main tower-gables, the flying buttresses from tower corners to spire ribs, and the slope of the spire, are all arranged to heighten this monumental character of the spire. The buttresses throughout are moulded, and the pinnacles, which are crocketed, are finished with plain stops at the set-off and with gablets. The jambs of the entrance doorway are to be moulded, and enriched with shafts having moulded bases and carved capitals, the moulding carried about the arch. Above this is tabernacle or tracery work, divided into seven parts forming panels and windows, having shafts with moulded bases and carved capitals, crocketed gablets, and tracery enriched with cusps and other ornamental work. Above this the belfry window of four lights with mullions and tracery in the head; a hood moulding resting on corbels will extend over the opening, and intersect with crocketed gablets, and finish with a fleuron. The face of the enclosed panel above the arch is to be decorated with tracery and cusps; on the face of the tower overlooking the church roof, this window head only will appear as a spherical window [?]. The several buttresses of the tower will finish with crocketed pinnacles, the gables to be finished with moulded flower tracery terminating with cross fleurons. The spire will rest in an iron shoe-plate set upon the top of the tower. This will turn up six inches at the outer edge, and turn down 12 inches on the inner side of tower wall; farther up wrought-iron bands will be carried about the interior. The walls of the spire will be six inches thick at the base and five inches at the top. Its sides are to be pierced with eight narrow windows. All the walls of the church are crowned by cornices which are to be in single stone pieces between buttresses and to be hollowed out for ⅜″ galvanized iron trough with copper spouts to empty through gargoyle heads at the several corners. There are in all nearly a hundred of these monstrosities attached to the church walls. The nave and transept roofs will be slated, other roofs to be covered with copper, except porch roofs which are in stone. The cresting along the apex of the roofs and on the porch roofs will be in bronze. The only niches on the exterior are at the west walls of the transepts, where corbelled niches have been placed. The flying buttresses and the many pinnacles carried up here, there, and everywhere over the exterior present an appearance which by the general sight-seer is styled rich, magnificent, and beautiful.

Within the church the stone construction is of Berlin, Ohio, sandstone, though for the step to choir and chancel, and for panel-work in the chancel, marble is employed. The basement story will be 14 feet in the clear, and is to be fitted up as a Sunday-school room. Below the choir and chancel, however, a mortuary chapel will be arranged 22 x 31 feet. This may be entered either by sliding doors from the Sunday-school room, or by a stairway from the organ room, and by an ante-chamber. From the right side of the chapel another ante-room, 10 x 10 feet, leads to the crypt, which is directly under the octagonal robing-room. The crypt is 16 feet across, and 18 feet high. In two of the sides windows open, in another the entrance, at which an elaborate bronze gate will be fixed. The remaining six sides of the room will be fitted up with niches; at the angles triple columns in colored granite or marble will be placed, and from their capitals ribs of white marble will extend to a series of bosses about a well-hole above. The ceiling, groins, and vaulting will be entirely of white marble. The opening in the ceiling will be filled in with heavy plate glass as part of the robing-room floor. In the centre of the crypt floor a pair of sarcophaghi will stand, to be tenanted by Mr. and Mrs. Stewart respectively. By the use of color and carving in rich and rare stone it is intended to make this crypt the most impressive portion of the structure. The work on this coffin-room will be by special contract, at a cost of over twenty thousand dollars. The floor of the church proper will be of iron beams with brick arched filling, supported on iron columns. The columns supporting the clerestory and the transept arches will also be of iron, clustered in imitation of the usual stone forms. It was at first intended to have these columns enamelled and colored to represent rare polished marbles; but this palpable fraud was abandoned, and now it is proposed to bronze them. About the walls a wainscoting in stone panel-work will extend also into the vestry and above the interior of the porches. The window jambs of the lower and also of the clerestory windows will be in stone. The sides of the chancel will be in stone up to the window-sills. In three of these sides white marble slabs will be inserted for the usual holy inscriptions, and the other sides will accommodate five sedilia and a piscina. On either side of the chancel arch, on the walls of the choir, will be tracery enclosing tablets of white marble connecting with a corbel, over which is a niche with crocketed canopy enriched with buttresses and crocketed pinnacles. This pair of niches will be occupied by statues of Mr. and Mrs. Stewart. At either end of the transepts screens of stone panel-work will surround the transept entrances; and at the main entrance, at the rear side of the tower, there will be an open window to the interior of the tower, the tracery extending nearly to the top of the nave. On the centre mullion a corbel is placed for a statue, while the upper section of the tracery in the window will be occupied by a clock face. Half columns in iron, corresponding with the iron columns of the nave walls, will be planted against the aisle walls, and up through the triforium similar half columns will be carried up to the spring of the roof vaulting. The arches supporting the clerestory will be of stone; but the panel-work representing the triforium will be in plaster, as will the ribs, bosses, and panelling of the nave and aisle ceilings, tinted to Berlin stone color. The windows are to be filled in with most highly colored glass, while in the tower the set of 13 chime bells from the Machinery Hall at the Philadelphia Exposition will be placed. These bells have a total weight of twenty thousand pounds of metal, and were purchased expressly for this church. The height of the interior is as follows: to apex of nave ceiling 53 feet, to apex of aisle ceiling 26 feet, to apex of chancel arch 37 feet, the chancel floor standing three feet above the nave floor. The church floor will be laid in marble tile, and it is not intended to place pews, but have the interior free for promenade, temporary seats to be placed in during services. Across the front of the choir, separating it from the body of the nave, an elaborate bronze rail will extend.

The cost of the whole structure has not yet been calculated; and from the piecemeal style of composition followed full contracts have not been possible, and the cost will necessarily run above what it otherwise would have been. The drawings were prepared by H. G. Harrison, best known as the builder of the Manhattan Market in this city. Much surprise is occasioned at the fact that the commission for the designs of such an important building should have been placed in comparatively unknown hands. Already the criticism has been very sharp, and several of our most experienced city architects have visited the works. The completion of the building is looked for about the close of 1878.

HOW THE ROCKFORD COURT-HOUSE WAS PLANNED, AND HOW IT WAS BUILT.

CHICAGO, June 18, 1877.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — Although you have already devoted considerable space in your valuable journal to matters connected with the Rockford disaster, yet I think I do not mistake your willingness to do still more in the same direction, provided any new information can be imparted, or if any mistaken conclusion can be corrected.

Of my relations to the actual construction, and the part I took in the erection of the building, you are already informed. It seems to me that the interest to the building public, in all this controversy, is centred in these questions: How was the work actually designed to be built? and what was the character and nature of the information imparted to the contractor, that he could properly construct it? How did he construct the work? and in what way did the accident occur? Accompanying this communication are drawings respectively numbered 1, 2, 3, 4, and 5. Nos. 1, 2, and 3 show the elevation, plan, and section of the work as it was intended by me to have been constructed. It will be necessary to supplement this question, "How was the work actually designed?" etc., by stating the exact condition of plans issued, and of the information given. Originally the plans made and sold to the county contemplated light construction with light metal cornices, etc., which were afterwards changed to stone. These modifications were *indicated* upon the old plans, and *figures* wherever necessary were changed to conform to the new construction. Among them were these *bearing walls* or "*piers*," which were increased in thickness to the length of four bricks, producing the particular measurement of 2 feet 10⅜ inches. The walls at these bearing-points, originally double with air space between, were made solid (see supplementary report of experts, first story plan mentioned as colored solid in contractor's copy in *American Architect* of June 2), and bond stones introduced. At this time I made computations of the weight to be carried (from the best authorities), and my result was something over one hundred tons upon each column. My remembrance is, that it did not exceed fifteen tons over. And I made oath upon the first day's investigation before the coroner's jury that I had computed the weight to be a little over one hundred tons, and I had previously informed the contractor of my computations; and as the peculiar location would not allow of any thicker wall without disfigurement to the room, or obstruction in the vault or room, I adopted this form of construction. Being satisfied of the sufficiency of the bearing-walls for all that was expected to be imposed upon them, I issued a *full* set of working scale plans to the contractor, with these important points fully explained by figures and coloring of plans, and a ½ inch scale sketch of these "piers" (as indicated by "No. 3" of the drawings sent to you), besides verbal information and instructions. I have never considered these to be isolated "piers:" if they were, it would have been indeed a gross error to have designed them; but they are continued walls, which, at the centre of a positive weight above, are increased in thickness, forming pilasters, but which have been miscalled "piers;" and the fig-

ures given by the experts have been based upon isolated piers, for they give but the area of the solid part (6.7326 square feet), hence my calculations have been misjudged.

And while on this subject, I wish to revert to the report of another committee, organized since the county board commenced its sessions, and in which report Gen. Smith, one of the committee, states that a bearing-stone twelve inches wide and sixteen inches long, and bearing only on the twelve-inch portion of the hollow wall, has a load to carry of *eighty tons.* "The wall, acting as a beam, *transfers a portion of its weight to the adjoining supports*, and so failure is for the time being prevented." The explanation of the support, as "acting as a beam," is just what I expected of my "piers" of over six square feet each and continuous walls to do, and which they could have done with ample security and strength, had they been constructed as they should have been; for the extreme weight should not have been over one hundred and thirty tons.

My computation of the weight was made from walls of twenty inches thick, while at projections it was greater. In actual construction two sides of this pavilion were increased from twenty inches to two feet six inches thick, unknown to me. This was done by the contractor without consultation with any one that I know of. The estimate made by the experts was from measurements at the building; hence a considerable increase over my result.

To sum up, then, *it was designed* that continuous double walls, increased to a certain solid thickness, and with bond stones, should carry a weight which with proper distribution, as provided for in design, would not have been, at the extreme, ten tons per square foot; and sufficient drawings and specifications *were* furnished the contractor to build to such a result.

Referring again to drawings Nos. 1, 2, and 3, it will be seen that upon each plan there is a certain fixed point within the solid part indicating a central point. This is the vertical line of pressure from the centre of the column in second story, and was the centre of the square of two feet four inches, the size of *all* the bond and bearing stones, through the thickness of the walls; but as the walls were thicker by six inches, it left a face work of brick entirely concealing the bond stones from outside view. The object of this was to protect these *lime stones* from exposure to accidental fire, as they were within the walls of a fire-proof vault, and sustaining great weight. Experience in the fires of Chicago had taught me thus to protect them. Headers were specified every fifth course in the brick; and if placed as I had directed them, and as shown in "No. 1," it will be seen that the strength of the outside face was not lost to the sustaining power of the walls. These walls were, at the floor line of each story, to be stayed by the beams of floors upon the one side, and the solid brick-work of arches, with their *tension rods*, upon the other. Finally, with the specifications as quoted in the report of the experts as to quality of work (except that for these vaults it was particularly specified to be the "hardest burned brick"), the information and drawings, as I intended the work to be, is complete.

The first editorial in the the *Architect* of June 2 says that the committee of experts were not consulted relative to the contract between myself and the county: it is also quite true that they were not instructed by those that employed them to consult me in *any particular*, and, setting aside a few minutes when they called me in on their own responsibility, after learning from Mr. Bauman that I had given him important information relative to the vertical bearing from the centre of the columns, I had no consultation with them at all; and further, this committee was provided not with the working scale plans furnished to the contractor to build by, but with the old originals, as modified for purposes of reference and record. I think this committee did nobly with the information at their command; but they did not do me justice, for they were deprived of the means to fully inquire into all particulars. The contractor suppressed his plans, sketches, and withheld every thing he could that would in the least criminate him; and he has been eminently successful in the result.

The jury who employed these experts, from the outset, seemed to consider that I was the one person to avoid; and no *consultation*, or *any recognition* of my past connection with the building, was made, except by direct *prosecution* before them. I was, as I have said before, pre-judged; and although I was supposed to be the arch(fiend?)itect upon whom this foul charge of manslaughter should rest, and that I was supposed to be fully informed as to all the particulars of the construction of the building, yet, when experts were employed, they were instructed to go about their business without consulting me. There is not an architect of any extended practice, who does not know that there are many important instructions and much important information given verbally to the contractor as the work progresses, that it would depend upon the honor and honesty of the two to bring to light, if inquired for. Accordingly, in my case, I was at a great disadvantage to bring the truth before the public.

The question, "How did he construct the work, and in what manner did the accident occur?" can be very briefly answered.

The report of the experts already published fully explains the work and the material, and the quality of each; but to their theory of the cause of its failure, I do not wholly agree, at least not as represented by the drawing accompanying it. By referring to "No. 4" of my sketches, the walls and "piers" as actually constructed will be seen. It was arbitrary that the iron column in the second story should be placed at the exact point designated by the figures on the plans throughout, in order to meet exactly the construction over: hence by the reduction of the pier from 2 feet 10⅝ inches to 2 feet 5 inches, the iron bearing-plate *did* overhang the pilaster on the inside 3⅝ inches and the bearing-stone 5⅝ inches; and this overhanging portion had no bearing (except on cinder concrete put in contrary to specification); accordingly as shown by "No. 5," with a weight estimated at the time it fell of 102 tons on the iron column, there were between the points "C" and "D" 51 tons, and between "D" and "G" 51 tons. The greatest accumulation of weight was at the point "C;" and if this pier under had been of cut stone solid, the result would have been the same, for the bearing-stone could never have stood such an unequal pressure, even had the pier been capable of carrying it; but as it was, day by day they piled on more weight and came at last to the final "straw," and the crushing commenced. I think it was but the question of a few minutes, after the first few fissures in the brick were made at "C," to travel quickly to the large crack reaching down to the skewback (which was another innovation of the builder), and then the 102 tons were entirely outside the axis of the column between the points "E" and "F." To use the words of the contractor as nearly as I can remember, as he informed me of the accident the day after, "I was under these columns and in the first story fifteen minutes before it fell, examining the walls, as is always my habit to do on every building when I am putting on more weight; and I did not see any crack or settlement nor indication of giving away; and just before it fell Mr. Latham (the superintendent) and myself were congratulating each other on the progress and success of the work, when I felt a sudden sinking under my feet (he was then on the main roof to the rear of the pavilion) and I sprang to the main wall just in time to save myself, when I saw the *west column supporting the pavilion shoot out and go down.*" Can there be any better explanation of drawing "No. 5"? I have no doubt that these walls were fair and sound to outside view up to within *two minutes* of the time that they fell: the secret lay hidden underneath the concrete at the back. The horrible man-trap was set when the bearing-stone was set, and only required that last crowning stone to spring the trap, and plunge into eternity those unfortunate victims. The *Architect* criticises my letter to the Chicago *Tribune* so far as to say that as I made no mention in it of any original computations as to the strength of walls, hence it is to be supposed that I never made any at all, and "that they were designed by rule of thumb." The omission to *mention* my computations in that letter, I will admit, was done "by rule of thumb," or rather through the crowding out of it by other thoughts, and my omission or failure to explain some other point may yet be called in question; but there is one clause in that letter I wish to call attention: to it is next to the last one. I say, "I furnished to this jury all the information *in my power.* I have distorted and concealed nothing." I might have added, that I could have placed more information before them than I did, had it been *in my power;* but I was deprived of a fair hearing, my own statements were purposely misconstrued, my witnesses were insulted and "bull-dozed" (excuse the vulgarity, it is pertinent), and many of my own questions sent up in writing to the coroner to be asked witnesses who appeared against me were actually torn up, or thrown under the table, and were made no use of (I have a number of witnesses to this fact); and I was informed by my attorney I could not help myself as they (the jury) had the law in their own hands, and could do as they pleased. I have not brought this out here to exhibit my personal troubles or difficulties, but to show that where I should have had a fair hearing, and where I should have been able to have brought out these facts, I was entirely unable to do so. The morals that have been drawn by the *Architect* from this and other similar sad events are admirable; and I only hope that it may be of benefit now that the disaster has occurred, and that future edifices and their designers may be permanently benefited and improved; and as for myself, where I am wrong I shall not be slow to acknowledge and accept it, and improve thereby. There are matters of practice and business management that I am at fault in, and it has placed me at a serious disadvantage; but as for my drawings and their practicability, I refer you to almost the opening clause of the experts' report, which says, "The plans and specifications have been very carefully drawn with the exception of a few omissions:" these omissions were made up in detail, scale, working plans, and sections, as well as verbal instructions given the contractor, which the committee were unable to get at, or were not aware of.

The verdict of the jury has gone out to the public, that I am the almost sole cause of the disaster; but its legal consequences upon me or anybody else concerned are harmless; it has no effect, and ceases to exist except in remembrance.

The County Board has since convened at a special session; they listened to my proposition and to those of the contractor, but chose to select another expert committee to receive plans upon the reconstruction. I presented to that committee plans and specifications for such work: they chose to make plans of their own (which are

in the main identical with mine); these they presented to the board together with specifications for strengthening the work that was shattered by the fall of the pavilion. The contractor made a bid for such work amounting to $16,000, which was accepted by the board, causing the county to assume all liabilities for damages. The old superintendent presented his resignation; a new one was appointed by the building committee, who is a local architect of Rockford, and a thoroughly capable man; and I am as I was, architect of the building, but with no more responsibility in its construction than I had before. Respectfully,

HENRY L. GAY, *Architect.*

[We print the foregoing letter from Mr. Gay, the architect of the Rockford Court House, because the case is one of special interest, and because in one that so seriously concerns a professional reputation our readers who have followed the published accounts ought to know on what the architect relies for justification. It should be understood, however, that we cannot ordinarily be expected to give up so much of our limited space, or ask so much of our readers' attention, to letters of personal explanation and personal reproach. — ED. *American Architect.*]

INTERIOR DECORATIONS.

I HAVE followed with much interest the series of articles on "Interior Decoration," prepared for the *Architect* by Mr. Van Brunt. The theory that architecture and decoration should combine and harmonize, with no discordant notes or harsh gradations, is not new; but it is only within a few years that its study has been taken up systematically and with a desire to attain to a better knowledge of its underlying principles. Seventy years ago, the students of interior decoration and furnishings and the collectors of bric-à-brac were looked upon as harmless enthusiasts, or even as frivolous and effeminate pedants.

In 1807 Thomas Hope published in London a folio of 173 pages, entitled "Household Furniture and Internal Decorations, executed from Designs," which was taken up by the *Edinburgh Review* of the same year, in a manner that shows the feeling of the period.

"At a time," says the reviewer, "when we thought every male creature in the country was occupied with its politics and its dangers, an English gentleman of large fortune and good education, has found leisure to compose a folio on household furniture. We do not think this would have been much to his credit, even if the upholstery had been more laudable than it is. A man of taste, if he be also a man of leisure, will show it, no doubt, in his furniture, as well as in his dress; but he will infallibly make himself ridiculous in this country if he make a study and an occupation of such frivolous concerns. What should we say of a young nobleman who had studied and travelled, and drawn and modelled, for many years, in order to acquire and describe a collection of classical wigs, spencers, boots, and pantaloons? And what better are Mr. Hope's stools, fire-screens, candlesticks, and dressing-glasses? There is in England, we believe, a pretty general contempt for those who are habitually and seriously occupied about such paltry and fantastical luxuries; and at such a moment as the present, we confess we are not a little proud of this Roman spirit, which leaves the study of those effeminate elegancies to slaves and foreigners, and holds it beneath the dignity of a free man to be eminently skilled in the decoration of couches and the mounting of chandeliers." The critic here takes up Mr. Hope's style of composition, which he handles none too severely; for in verboseness and high-flown sentences it "really deserves some commemoration for the pre-eminence of its solemn foppery;" adding that, "As the great price of the volume puts it out of the reach of ordinary readers, we shall make a few extracts just to let them see what kind of books fine people pay ten guineas for."

After an introduction of twenty pages, the author proceeds to describe the difficulties he had to surmount in the preparation of his work, and in finding proper artisans to carry out his designs; and he strongly advocates the principle that each article of furniture should be ornamented with emblems expressive of its use and derived from classic mythology, as appears from this description of an organ: "The car of the god of music, of Apollo, glides over the centre of the pediment. The tripods, sacred to this deity, surmount the angles. Laurel wreaths and other emblems belonging to the son of Latona appear embroidered on the drapery, which, in the form of an ancient peplum or veil, descends over the pipes of the instrument, and gives it the appearance of a sanctuary." Why an organ should have the appearance of a sanctuary, is not easily explained; but the idea seems simplicity itself, compared with the decoration of a mantel-piece on which are two boldly-projecting horse heads, placed there for the reason that there was a bust in the centre, inscribed with the name *Philip*, which, we are told, signifies in Greek a lover of horses.

To enter one of the apartments described by Mr. Hope without a Virgil to explain the mysteries, would be to find one's self in a labyrinth of untranslatable mythology. Here is the description of an apartment, the use of which is not given: —

"The central object in this room is a fine marble group executed by Mr. Flaxman, and representing Aurora visiting Cephalus, on Mount Ida. The whole surrounding decoration has been rendered, in some degree, analogous to those personages, and to the face of nature, at the moment when the first of the two, the goddess of the morn, is supposed to announce approaching day. Round the bottom of the room still reign the emblems of night.

"In the rail of a black marble table are introduced medallions of the god of sleep and of the goddess of night. The bird consecrated to the latter deity perches on the pillars of a black marble chimney-piece, whose broad frieze is studded with golden stars. The sides of the room display, in *satin curtains*, draped in ample folds over panels of looking-glass, and edged with *black velvet*, the fiery hue which fringes the clouds just before sunrise; and in a ceiling of cooler sky-blue are sown, amidst a few still unextinguished luminaries of the night, the roses which the harbinger of day, in her course, spreads on every side around her.

"The pedestal of the group offers the torches, the garlands, the wreaths, and the other insignia belonging to the mistress of Cephalus, disposed around the fatal dart of which she made her lover a present. The broad band which girds the top of the room contains medallions of the ruddy goddess, and of the Phrygian youth, intermixed with the instruments and the emblems of the chase, his favorite amusement. Figures of the youthful hours, draped with wreaths of foliage, adorn part of the furniture, which is chiefly gilt, in order to give more relief to the azure, the black, and the orange compartments of the hangings."

The concluding lines of Mr. Hope's introduction may well be quoted here, as they contain a kind and earnest warning to any young artist who may become the possessor of his book, "not to confine his exertions to a mere servile copying of its contents."

In bringing once more into notice an almost forgotten work of the past, I have endeavored to show how much the present generation is indebted to the efforts of their predecessors in fostering a taste for the true and beautiful.

Struggling against ridicule and a vitiated public taste, it is not surprising that they were often crude in their conceptions, or that the descriptions of their designs are any thing but satisfactory. But it is evident from all that they have said and done, that their hearts were in their work; and if they accomplished but little in their day and generation, we owe to them our gratitude for a step in the right direction, at a time when so little was thought of household art.

G. C. M., JUN.

IMPROVING WILLIAMSTOWN.

NEW YORK, June 20, 1877.

TO THE EDITOR OF THE AMERICAN ARCHITECT: —

Please state that the designer of the admirable work at Williamstown, incorrectly referred to the undersigned in your last number, is Mr. B. S. Olmsted of Rye, N.Y.

F. L. O.

SECURITY IN BUILDING.

[From a lecture by Prof. Barry at the Royal Academy.]

LET us now consider for a few moments the peculiar requirements of modern cities, as they present themselves to the architect.

Any large assemblage of people in one place must, of course, give rise to difficulties as regards the provision of healthy dwellings. A cottage standing in its own grounds may long be deficient in many things, without causing more than a passing inconvenience. Soon other cottages are erected near it; these press one upon the other, till waste spaces are covered and houses touch. The ditches are defiled, springs are polluted, verdure is banished, and the air is thick with smoke. The former country hamlet is now the centre of a great town, the only home of its poor, and only too often the hotbed of crime and vice. What can architecture do in such a case, but wait and plead until the public sense of responsibility is roused to insist on the necessity of wholesome habitations for all classes? The architect may then point out the advantages that may accrue to the entire community by making arrangements which, while removing reproach, may add interest, convenience, and beauty to our cities.

But it is with other classes of buildings than the houses of the poor that we have to deal. While these need not be ugly, they cannot, of course, add much to the architectural ornaments of a great town. Such ornaments must be looked for in the public buildings, the banks, mercantile offices, and the dwellings of the wealthier inhabitants. On all public improvements, it has long been admitted that the public has a right to speak. But though the principle has been admitted, the application of it has hitherto been far from complete; and even in utilitarian matters it is to be feared that some terrible catastrophe may one day startle the public mind by the revelation of deficiencies in our legislation, as applied to the buildings in large towns.

Now, I yield to none in affirming that an architect must bear all fair responsibility; but if it be made clear that our public regulations are insufficient to secure good building, and even to provide for the safety of the public, it is evident that in this free country, in which the popular voice is all-powerful, the real responsibility must rest with the public itself.

Architects are constantly publicly instructed with emphasis, by self-constituted advisers, as to evils in our buildings, some of which are imaginary, while of others they are well aware; and remedies are presented with all the confidence natural to irresponsible critics. But it is forgotten that such remedies would frequently bring inconveniences of their own, and that they are generally costly, and would therefore raise rents. Houses in London are moreover mostly built on land which is leased for a term of years, which, I am sorry to notice, is becoming more and more restricted in some recent leases. Doctrines of tenant rights have not reached the metropolis; but it is idle, in my opinion, to hope for substantial improvement in our domestic architecture, as long as men are called upon to build for the ultimate advantage of others. It is scarcely too much to say that in solidity of construction, and in provisions for safety in our places of public resort, we are behind most, if not all, of our European contemporaries. These are matters which are most important to the architect; for without good and solid construction, architecture is a sham.

We know how careful the Romans were as to the corridors and exits of their theatres; and their work will remain as a guide to future ages, after many of the flimsy structures of to-day have totally vanished.

If the architect be, as I have said, greatly interested in these questions, they are to the public of vital moment, and it is for the public to deal with them through its chosen representatives. It is useless for an architect to provide exits in his plans, which are afterwards built up and disused because each doorway is a source of expense to the management; and there is no encouragement to design good houses, as long as people prefer low rents to healthy homes.

In country places, where buildings are perhaps placed in spacious parks isolated from all contact with others, it may doubtless be contended that any regulations in the interest of the public are uncalled for, and would be an unnecessary interference with individual liberty. But in towns the case is different. Here a man cannot live only for himself: he must so enjoy his own rights as not to injure his neighbor's. The principle of building-regulations has long been conceded, and it only remains to determine their extent and application. Such regulations are, indeed, essential to the well-being of the community in modern cities.

Having already spoken to you on the question of materials, and their effects on originality of architectural design, I will not dwell again upon that part of the subject. As, however, I have referred to danger from fire, I may perhaps be allowed to say a word as to the use of incombustible materials in our dwellings and public edifices. We do not need to be reminded how terrible an enemy fire is to architecture and to human life. We know what it has done in former times to London, and the misfortunes of Chicago and Boston are recent. Hardly one of our theatres has escaped, and few even of our cathedrals have not been injured or threatened. It is therefore unnecessary to say that architects are bound to study this question, which is far from simple. Where a great body of fire exists, as in a warehouse stored with inflammable substances, such materials for supporting fire bear so large a proportion to the constructional portions of the building that the latter are simply overwhelmed, and wood, stone, iron, marble, and brick are involved in one common ruin. This has led some persons to think that a fireproof building is impossible, and perhaps in the strictest sense it is. Not so however, practically, in the vast majority of cases with which architects have to deal. Because iron and stone have yielded when exposed to intense heat, it does not follow that they may not be employed with advantage when all the circumstances of each case have been fully considered; and I cannot subscribe to the doctrine that in public buildings it is better that the stairs should be made of wood, which will burn, rather than of stone, which will not.

There is and should be no difficulty, at any rate, in so constructing our domestic architecture that the existence in our houses of any large body of flame sufficient to cause danger to materials not in themselves capable of ignition, should be a physical impossibility. Unfortunately, this is seldom or never done, from causes to which I have already adverted. Houses are built to last for a term of ninety-nine or even eighty years; and their builders prefer to pay premiums to fire-offices rather than to invest additional capital in their buildings so as to render them permanently safe from danger by fire.

The application of incombustible materials to ordinary buildings is still in a backward state in England, more so by far than it is in France, for example; and with reference to theatres it has scarcely been seriously attempted. In these buildings the stage and its appurtenances must probably be always more or less inflammable, although chemistry may help us in this respect; but as regards the auditorium, no difficulty exists which is not to be surmounted by any skilful architect, and a dangerous fire in this portion of the building ought to be an impossibility.

It is, indeed, even now panic, rather than actual fire, that constitutes the most terrible danger in case of accident; and if the audience were conscious that the construction was as it should be, if they saw wide corridors and ample staircases of materials which will not burn, we should never again have to deplore such a calamity as the American catastrophe already adverted to.

NOTES AND CLIPPINGS.

FALL OF A FRAME CHURCH. — An unoccupied building at the corner of Graham Avenue and Devoe Street, Brooklyn, E.D., fell on Saturday evening. The building was of wood, built upon brick piers, and was 125 feet long by 45 feet in width. It was erected about fifteen years ago for the accommodation of a congregation that had deserted the Graham-avenue Methodist Church. Of late the building has at intervals been used by minstrel troupes, etc. It has been deserted for about a year by all except mischievous boys, who knocked away several of the piers upon which it rested. For months it has been in danger of falling; and the Fire Department has several times notified a man who is reputed to be the owner of the building to repair it. The loss caused by the accident is small.

A MEMORIAL WINDOW. — A memorial window to the memory of the late Henry A. Sims, architect, of Philadelphia, and to the memory of his son John Clarke Sims, has been erected in the Episcopal Church of St. John, Prescott, Canada. The window is of two lights; the first division bears the inscription: "Henry Augustus Sims. Born Dec. 22, 1832; died July 10, 1875;" and the second: "John Clarke Sims. Born May 4, 1866; died March 5, 1874." The subject treated is "The Song of Simeon." The window was designed by the late Mr. Sims himself, when his child, John Clarke Sims, died. Before the work had been commenced Mr. Sims followed his son to the grave; and the window has now been put in by Mr. Spence himself as a token of his friendship for the deceased. There is something peculiarly appropriate in the placing of this window in St. John's Church, Prescott, — a church which was designed and erected by Mr. Sims, and which was, indeed, his earliest work.

THE EFFECTS OF A GALE. — On the 20th inst. a north-western gale did much damage in Iowa City, Io., overturning chimneys, blowing down trees and fences, and injuring the crops in the surrounding country. The steeple of the Presbyterian Church, with part of the building, was blown down; loss to the church about seven thousand dollars. The spire of the Congregational Church was wrenched out of the perpendicular, and its foundation cracked so that it must be replaced.

ST. PETER'S CATHEDRAL, MONTREAL. — The most remarkable, though not the largest building in Montreal, is undoubtedly the new Cathedral of St. Peter, an exact model on a reduced scale, it is said, of St. Peter's at Rome. The walls are now about fifty feet high; but for the present work has come to a standstill, as it is the custom of the Roman Catholics there to build only as long as the money comes in, whereas the Protestants finish their churches at all hazards, and then mortgage them to the last brick to satisfy the builders' claims. The most striking feature about the cathedral at present is the absence of windows, which gives it a very barn-like appearance.

ANOTHER ACCIDENT IN THE BERGEN TUNNEL. — As seven bricklayers were at work on shaft No. 2 of the new Bergen Tunnel on Saturday, June 16, a bucket containing about eight hundred bricks was carelessly lowered, and striking the scaffolding, on which there was also a quantity of bricks, broke the timbers, and hurled the men and bricks in a mass to the bottom of the shaft, a distance of fifty-five feet. No one was killed; but all the men except one were badly mangled. The cause of the accident was a broken beam in the scaffolding. D. Cavanagh, the foreman of the gang of bricklayers, who was one of the victims, was aware of the danger on Friday night, and gave orders that the beam should be repaired at once. For some reason his order was disobeyed.

A BORROWED BELL. — St. Peter's Episcopal Church of Uniontown, Penn., has been using a borrowed bell since 1842. The bell was loaned that year by St. Peter's Church, Philadelphia, and recently the wardens of the latter church made a demand for the bell, which has been shipped to them. According to the inscription on it, the bell was cast in 1711, and is consequently 166 years old.

A NEW CANAL. — Señor Rafael Nunez, a prominent citizen of the Republic of Colombia, has arrived in this country in order to arrange for cutting a canal from Cartagena to the River Magdalena. The object is to throw open the Colombian territory to American trade, instead of allowing it to be monopolized by English traders. The canal would be about sixty miles long at least, but we believe there is a canal already connecting Cartagena with Sabauillo at the mouth of the Magdalena, which can be used for about half this distance. It is thought that $200,000 will be quite enough to cover all expenses.

THE BYRON MEMORIAL. — The memorial committee have selected the design of "Richard Belt," in which the poet is represented as seated upon a rock.

THE LUXEMBOURG. — The Luxembourg Palace in Paris will soon be enlarged by the addition of a new room on the ground floor of the north wing. This room will be lighted by eight large bay windows, four of them opening on to the garden and four on to the court. It is intended to be an extension of the sculpture gallery. The old staircase leading to the upper floor will remain as it is, the expense and difficulty of replacing it with a better one being considered insuperable.

DRY ROT. — The *American Journal of Pharmacy* says that the best preservative against dry rot is the following of Mr. Schwartze, who made millions by it, and by whose recent death the secret was revealed: one part oil of cassia, one part wood tar, and one part train oil; apply three coats on the reverse sides and on the ends of planks, floors, etc. In all probability oil of cassia played the chief rôle as preservative.